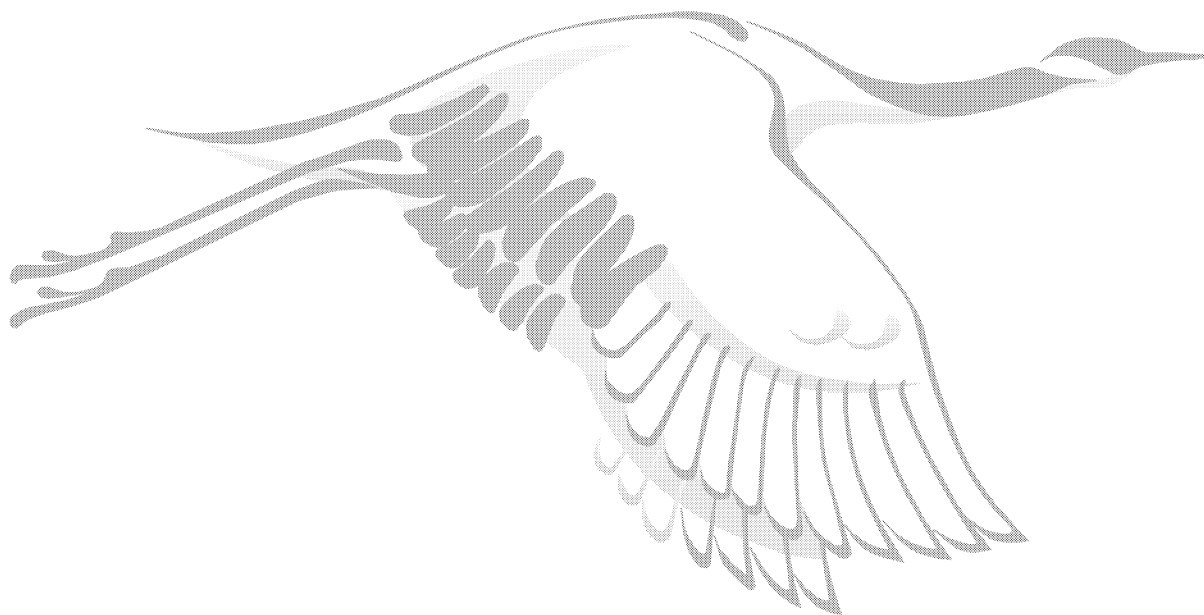


# **Great Salt Lake Comprehensive Management Plan and Decision Document**

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**Prepared by the Great Salt Lake Planning Team  
Utah Department of Natural Resources**



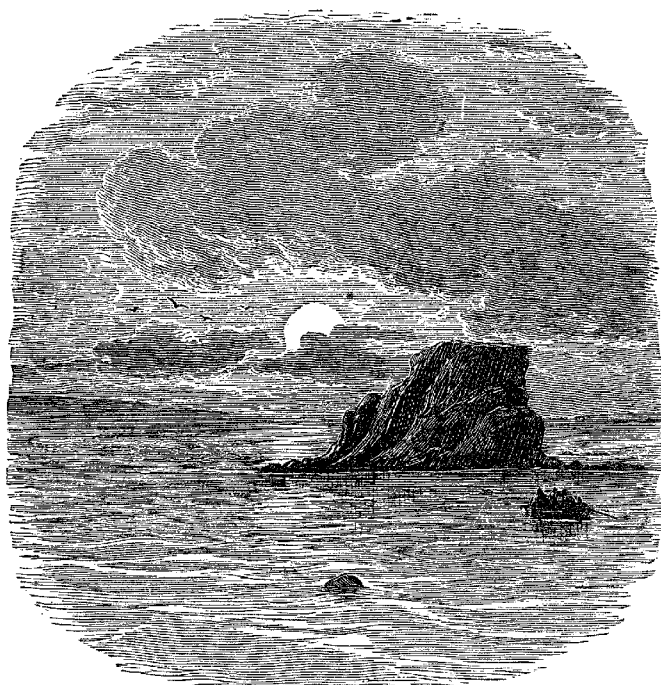
**March 1, 2000**

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# **Great Salt Lake Comprehensive Management Plan and Decision Document**

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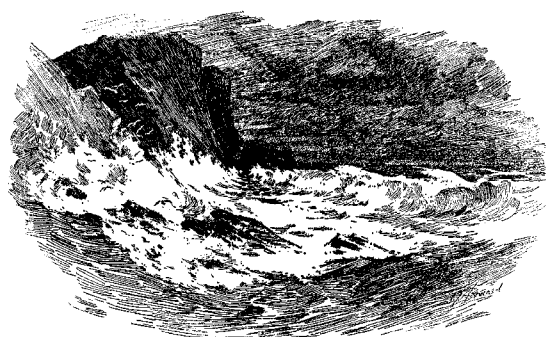


**Prepared by the Great Salt Lake Planning Team  
Utah Department of Natural Resources**



**March 1, 2000**

# Record of Decision





# RECORD OF DECISION

Record of Decision Number 00-0301-GSL CMP

## PROPOSED ACTION

Approval of the final Comprehensive Management Plan (CMP) for Great Salt Lake (GSL). This action includes all state lands below or adjacent to the surveyed meander line of GSL. This action involves satisfying statutory requirements and administrative purposes for the CMP.

## RELEVANT FACTUAL BACKGROUND:

In 1997 the Great Salt Lake Planning Project was initiated to develop a CMP. A planning team (team) consisting of representatives of Department of Natural Resources (DNR) divisions was assembled. The purposes of the project were: (1) To establish unifying DNR management objectives and policies for GSL trust resources; (2) To coordinate the management, planning and research activities of DNR divisions on GSL; (3) To improve coordination among DNR divisions, establish a decision-making review and appeal process, develop a sovereign land management plan for the lake that balances multiple-use and sustainability, resolves issues and improves management of the lake and its resources; (4) To develop a sovereign lands and resources management plan, and; (5) To establish a process for plan implementation, monitoring, evaluation and amendment.

Formal notice that the project was proceeding was sent to the Resource Development Coordinating Committee (RDCC) in February 1998 (State Identifier Number UT980203-010). Public Notices regarding public meetings for the project were published in The Salt Lake Tribune (2/8/98-2/15/98), Deseret News (2/8/98-2/15/98), Box Elder News Journal (2/11/98-2/18/98), Davis County Clipper (2/6/98-2/10/98), Tooele Transcript-Bulletin (1/29/98-2/5/98), and Ogden Standard Examiner(2/6/98-2/8/98). Notice of the meetings was also sent to persons on a mailing list that included permittees and lessees. Five public scoping meetings were held in Box Elder, Davis, Salt Lake, Tooele and Weber counties in February and March 1998. Representatives of the team met with federal agencies, local government officials, citizen and industry groups, and interested individuals for a variety of purposes from November 1997 through November 1999. A draft Statement of Current Conditions and Trends was distributed for public review and comment in October 1998. A draft array of GSL management alternatives was distributed for public review and comment in January 1999. Five public meetings on the management alternatives were held in Box Elder, Davis, Salt Lake, Tooele and Weber Counties in January and February 1999. A draft CMP was distributed for public review and comment in November 1999. The comment period ran through January 7, 2000. RDCC review concluded with a letter from RDCC on January 7, 2000 (State Identifier Number UT991116-010). The team reviewed the public comments and prepared responses. Based on this review the GSL Board of Directors approved the selected alternatives for inclusion in the final CMP.

## CRITERIA FOR EVALUATION

Article XX, Section 1 of the Constitution of Utah affirms the public trust over state lands: "All lands of the State that have been, or may hereafter be granted to the State by Congress, and all lands acquired by gift, grant or devise, from any person or corporation, or that may otherwise be acquired, are hereby accepted, and . . . are declared to be the public lands of the State; and shall

be held in trust for the people, to be disposed of as may be provided by law, for the respective purposes for which they have been or may be granted, donated, devised or otherwise acquired.”

Statute (Chapters 65A-2 and 65A-10) and rule (R652-90) combine to establish the management framework and planning requirements for the Division of Forestry, Fire and State Lands.

65A-2-1. Administration of state lands - Multiple-use sustained yield management.

The division shall administer state lands under comprehensive land management programs using multiple-use sustained yield principles.

65A-2-2. State land management planning procedures for natural and cultural resources - Assistance from other state agencies - Division action.

The division:

- (1) shall develop planning procedures for natural and cultural resources on state lands; and
- (2) may request other state agencies to generate technical data or other management support services for the development and implementation of state land management plans.

R652-90-500. Notification and Public Comment.

1. Once a planning unit is designated for a comprehensive management plan, notice shall be sent to the Office of Planning and Budget for inclusion in the RDCC agenda packet and, if appropriate, the weekly status report.
2. The division shall conduct at least one public meeting in the vicinity of a planning unit that has been designated for a comprehensive management plan.
  - (a) The meeting shall provide an opportunity for public comment regarding the issues to be addressed in the plan.
  - (b) The public meeting(s) shall be held at least two weeks after notice in a local newspaper.
  - (c) Notice of public meeting(s) shall be sent directly to lessees of record, local government officials and the Office of Planning and Budget for inclusion in the RDCC agenda packet and weekly status report. A mailing list shall be maintained by the division.
  - (d) Additional public meetings may be held.
3. Notice that a site-specific or resource planning effort is under way shall be given to:
  - (a) affected parties as required by rule for exchange, or lease;
  - (b) the Office of Planning and Budget for inclusion in the RDCC agenda packet and the weekly status report.

65A-2-4. State land management plans - Division to adopt rules for notifying and consulting with interested parties.

- (1) The division shall adopt rules for notifying and consulting with interested parties including the general public, resources users, and federal, state, and local agencies on state land management plans.
- (2) Division rules shall provide:
  - (a) for reasonable notice and comment periods; and
  - (b) that the division respond to all commenting parties and give the rationale for the acceptance or nonacceptance of the comments.

65A-10-8. Great Salt Lake - Management responsibilities of the division.

The division has the following powers and duties:

- (1) Prepare and maintain a comprehensive plan for the lake which recognizes the following policies:
  - (a) develop strategies to deal with a fluctuating lake level;
  - (b) encourage development of the lake in a manner which will preserve the lake, encourage availability of brines to lake extraction industries, protect wildlife, and protect recreational facilities;
  - (c) maintain the lake's flood plain as a hazard zone;
  - (d) promote water quality management for the lake and its tributary streams;
  - (e) promote the development of lake brines, minerals, chemicals, and petro-chemicals to aid the state's economy;
  - (f) encourage the use of appropriate areas for extraction of brine, minerals, chemicals, and petro-chemicals;
  - (g) maintain the lake and the marshes as important to the waterfowl flyway system;
  - (h) encourage the development of an integrated industrial complex;
  - (i) promote and maintain recreation areas on and surrounding the lake;
  - (j) encourage safe boating use of the lake;
  - (k) maintain and protect state, federal, and private marshlands, rookeries, and wildlife refuges;
- (l) provide public access to the lake for recreation, hunting, and fishing.
- (2) Employ personnel and purchase equipment and supplies which the Legislature authorizes through appropriations for the purposes of this chapter.
- (3) Initiate studies of the lake and its related resources.
- (4) Publish scientific and technical information concerning the lake.
- (5) Define the lake's flood plain.
- (6) Qualify for, accept, and administer grants, gifts, or other funds from the federal government and other sources, for carrying out any functions under this chapter.
- (7) Determine the need for public works and utilities for the lake area.
- (8) Implement the comprehensive plan through state and local entities or agencies.
- (9) Coordinate the activities of the various divisions within the Department of Natural Resources with respect to the lake.
- (10) Perform all other acts reasonably necessary to carry out the purposes and provisions of this chapter.
- (11) Retain and encourage the continued activity of the Great Salt Lake technical team.

R652-90-600. Public Review.

1. Comprehensive management plans shall be published in draft form and sent to persons on the mailing list established under R652-90-400, the Office of Planning and Budget, and other persons upon request.
  - (a) A public comment period of at least 45 days shall commence upon receipt of the draft in the Office of Planning and Budget.
  - (b) All public comment shall be acknowledged pursuant to 65A-2-4(2).
  - (c) The division's response to the public comment shall be summarized in the final comprehensive management plan.
  - (d) Comments received after the public comment period shall be acknowledged but need not be

summarized in the final plan.

2. Resource plans shall be published and made available upon request.

(a) Persons wishing to comment on these plans may do so at any time.

(b) The division shall acknowledge all written comments.

3. Upon completion of a site-specific planning process, the Record of Decision or other document summarizing final division action and relevant facts shall be provided to any persons requesting notice from the division.

#### EVALUATION OF FACTS:

The Division of Forestry Fire and State Lands (DFFSL) acknowledges its public trust responsibility. The Draft CMP includes the following text:

Briefly stated, the overarching management objectives of DFFSL and DNR are to protect and sustain the trust resources of, and to provide for reasonable beneficial uses of those resources, consistent with their long-term protection and conservation. This means that DFFSL will manage GSL and its resources under multiple-use sustained yield principles (Section 65A-2-1), implementing legislative policies (Section 65A-10-8) and accommodating public and private uses to the extent that those policies and uses do not compromise public trust obligations and sustainability is maintained. Any beneficial use of public trust resources is subsidiary to long-term conservation of resources.

Reasonable people may disagree over the extent to which the management direction in the CMP is consistent with public trust obligations because management actions are generally evaluated in the context of impairment of the public's trust rights. Substantial impairment is difficult to justify, but what constitutes "substantial"? Anything exceeding "small percentage" or "limited" seems to have constituted substantial impairment in various court rulings. An evaluation in this context leaves room for debate.

Multiple-use is defined in statute as the management of various surface and subsurface resources in a manner that will best meet the present and future needs of the people of this state. Sustained yield is defined as the achievement and maintenance of high level or periodic output of the various renewable resources of land without impairment of the productivity of the land. Some respondents believe that some actions under alternative A in the Draft CMP may jeopardize sustainability of public trust resources because of the way the relationship between multiple-use and the Public Trust Doctrine is interpreted. Arguments in support of this position include a statement that there is no legal authority to support the assertion that the Public Trust Doctrine includes whatever uses the legislature deems appropriate. There is merit to this argument. Proper interpretation of state statutes must be consistent with the state constitution, and rules promulgated by DFFSL must be consistent with statutes. There is no question that the division's implementation of the multiple-use sustained yield statute is subject to consistency with public trust obligations. All possible uses under a multiple-use framework are not necessarily protected uses under the Public Trust Doctrine. Any private uses of sovereign lands must yield to the criterion to avoid substantial impairment of protected public uses. Any inference in the CMP that multiple use takes precedence over public trust obligations should be remedied.

Public notification and public meeting requirements in statute and rule have been complied with.

Specific legislative policies have been addressed in the CMP. Strategies to deal with a fluctuating lake level are addressed in issue 1.2. GSL development is addressed in issues 6.1, 10.1 and 10.2. The flood plain is addressed in issue 1.1. Water quality is addressed in issue 3.1. Mineral leasing is addressed in issues 7.1 and 7.2. Waterfowl flyway system is addressed in issues 5.1 and 6.1. Recreation is addressed in issues 8.1, 8.2, 9.1 and 9.2. Boating is addressed in issues 8.1, 8.2 and 10.2. Federal and private wetlands are addressed in issue 16.1. Access is addressed in issues 9.2 and 10.2. Studies and publications regarding the lake are addressed in the section on monitoring and research. Public works and utilities are addressed in issue 12.1. Coordination and implementation of the plan is a separate section in the CMP. The Great Salt Lake Technical Team is addressed in the section on process and structure. The GSL Board of Directors has determined that the CMP complies with statute and rule.

Seventy comment letters, faxes and emails were received on the draft CMP. The comments were reviewed in their full text, organized by subject matter, and responded to as required by statute. A summary evaluation of comments and responses follows for each issue.

#### Issue 1.1 Flood plain

Public comments reflected a concern that the preferred alternative has no enforcement power, that a flood plain management plan is needed, and that such a plan is justified under public trust responsibility. In response, the regulatory role of local government and its adoption of flood plain delineations approved by the Federal Emergency Management Agency was noted. This is where incentives and enforcement exist in the form of participation in national flood insurance programs. In absence of substantial interference in public uses of sovereign land, and in absence of evidence that ecosystem sustainability is being lost, there is no public trust-based obligation at this time to do anything more than the action in alternative A.

#### Issue 1.2 Fluctuating lake level strategy

Public comments generally expressed some uncertainty over how the strategy would be implemented, and a need for a flood plain management plan was reiterated. Flood plain planning is addressed above. How the strategy would be implemented is addressed in comment responses.

#### Issue 1.3 West Desert Pumping Project (WDPP)

As expected, this issue generated a lot of comments from various perspectives. Much of the comment reflected some misunderstanding of the process that resulted in the original installation of WDPP. In the 1980s, the evaluation of alternatives to deal with flooding of GSL found that the most cost-effective alternative, as well as the one that could lower the lake level the greatest (amount) in the shortest period of time, was to pump the lake out into the west desert and create a large evaporation pond. The WDPP was designed to remove, through evaporation, as much water as possible. Pumping at 4208 is most consistent with environmental concerns, avoiding substantial startup and operational costs associated with pumping at 4205, minimizing conflict with the U.S. Air Force, and is reasonably expected to reduce peaks and duration of high lake levels. Implementation relies on adjoining landowner cooperation.

#### Issue 1.4 Locomotive Springs

This issue generated very little comment. The comments were in support of alternative A.

### Issue 1.5 Water rights

In absence of substantial interference in public uses of sovereign land, and in absence of evidence of irreversible ecosystem impacts, there is no public trust-based reason at this time to interfere with existing water rights.

### Issue 1.6 Large embayments

The east side of the lake is where all of the proposals over the years have focused. This area is the most important area for wildlife, recreation and, as community development approaches GSL from the east, the most important area for ecosystem sustainability. The hydrology of this area has altered to the point that any further alteration is difficult to justify under the public trust. This decision can be reevaluated in 30-50 years if additional sovereign land is needed to meet water demands.

### Issue 2.1 Salinity

As expected, this issue generated the most public comment. This is the most critical issue for ecosystem sustainability. Whether the reason is decreased causeway permeability or the loss of salt from WDPP is irrelevant. Something must be done now to address declining salinity in the south arm. In light of valid land use authorities, the extremely high cost of alternative B, the reasonable likelihood that alternative A will suffice to restore south arm salinity to its historical range, alternative A is prudent at this time. Extensive salinity monitoring will continue.

### Issue 2.2 Accounting for salts

No comments were received in opposition to alternative A. There is no royalty obligation on waste salts.

### Issue 3.1 Water quality

The Division of Water Quality (DWQ), the state regulatory authority, stated reasons it is opposed to development of numerical standards and changes to narrative standards at this time. In absence of substantial interference in public uses of sovereign land, and in absence of evidence of irreversible ecosystem impacts, there is no public trust-based reason at this time to challenge the adequacy of DWQ's regulatory actions. Monitoring may lead to a different conclusion.

### Issue 3.2 Wetland policy

It is appropriate for the state, as trustee and landowner, to assert a role in wetland regulation, not only to assess the adequacy of federal regulation from a public trust perspective, but also to address potential impacts not covered by federal regulation.

### Issue 4.1 Air quality

Coordination with the Division of Air Quality, the state regulatory agency, will improve DFFSL's understanding of potential air quality implications for public trust management.

### Issue 5.1 Biology

There is no hierarchy of protected public uses of sovereign land. In light of adverse impacts to wildlife that have occurred from other management activity on GSL, it is important that our understanding of wildlife functions in the ecosystem improves, and that wildlife values be better protected. In order to decide whether DFFSL or DWR has primary responsibility for certain management actions of GSL, it is appropriate to ask the Wildlife Board to take action regarding which 23-21-5 lands are to be formally designated as wildlife management areas.

### Issue 6.1 Sovereign land classifications

With the changes to the 1995 classifications associated with alternative A, a reasonable mix is provided. As site-specific planning is conducted in response to applications submitted that affect the development areas, alternative A for issue 5.1 will be taken into

account. This will achieve roughly the same purpose as the changes suggested in the public comment.

#### Issue 6.2 Geologic hazards

Public comments supported the preferred alternative.

#### Issue 6.3 Bear River Migratory Bird Refuge (BRMBR)

The U.S. Fish and Wildlife Service (USFWS) asserts ownership of land below meander in the old refuge. DNR is working with USFWS on issues relating to management of lands below meander.

#### Issue 6.4 Diking policy

Much of the public comment reflected a desire for a blanket ban on new dikes. There is no question about the adverse affects of some dikes, but other dikes serve public purposes as well as public uses protected under the Public Trust Doctrine. A blanket ban is inappropriate, but better evaluation of diking proposals is needed than has occurred in the past.

#### Issue 7.1 Mineral lease zones

The zones and policies of the 1996 Mineral Leasing Plan (MLP) address the concerns expressed in public comment. Action taken by the Wildlife Board under alternative A in issues 5.1 and 6.1, and site-specific planning may lead to revisions of the MLP.

#### Issue 7.2 Mineral lease policies

The zones and policies of the MLP address the concerns expressed in public comments.

#### Issue 8.1 Water recreation

The concerns expressed in public comments can be addressed through Division of Parks and Recreation plans such as the Strategic Boating Plan, resource management plans for individual park units, and in site-specific planning.

#### Issue 8.2 Navigation

Most of the comments on this issue were in reference to the northern railroad causeway. Associated benefits of improved water circulation, improved search and rescue capability, and improved research and monitoring capability were identified as justification for doing something other than alternative A. Interference with valid land use authorizations, the extremely high cost of dealing with geotechnical difficulties, and the fact that some navigation is possible through the causeway are reasons for continuing with alternative A mentioned in the team's response. Unless the existing land use authorizations are determined to be inconsistent with public trust responsibilities, alternative A is acceptable.

#### Issue 9.1 Off Highway Vehicles (OHV)

OHV use is a public recreation use. The area to be opened was identified through a process that involved upland owners and administrative agencies. Implementation is not an irreversible or irretrievable commitment. Monitoring will help identify the nature and extent of potential adverse impacts.

#### Issue 9.2 Recreation access

The concern over collateral damage from public recreation is acknowledged, but recreation is an appropriate use of sovereign land. DNR will address concerns as they arise.

#### Issue 9.3 Education and interpretation

Public comments supported the preferred alternative.

#### Issue 10.1 Commercial and industrial use

Reasons stated in opposition based on the Public Trust Doctrine have been addressed by clarifying the relationship between multiple-use and the doctrine. The preferences expressed in

favor of wildlife can be achieved to a great degree through alternative A, issue 5.1. While actual mineral pond relocations have not occurred, the management direction in the MLP to evaluate opportunities to trade existing leases with significant resource conflicts for the right to operate areas with less conflict is working.

#### Issue 10.2 Brine shrimp harbors

Alternative A is consistent with policies announced years ago. Brine shrimp companies have been given the opportunity to demonstrate to DNR how exclusive use can be compatible with the current policy. The brine shrimp industry would like to see Antelope Island State Park (AISP) Marina remain open, but the industry agreed to limit availability of the marina. Conversion of the AISP Marina was a stopgap measure.

#### Issue 10.3 Unauthorized construction

The only negative comments regarding alternative A were voiced by persons on whose previous trespass activity the policy is focused.

#### Issue 11.1 Grazing

The environmental concerns expressed in public comment will be addressed through monitoring and subsequent planning.

#### Issue 12.1 Transportation and utility corridors

Public comment in support of alternative A focused on potential adverse impacts if the AISP southern causeway were to become a transportation corridor. Comments in opposition to alternative A questioned the use of sovereign land for transportation corridors. Related issues such as diking and freshwater embayments were mentioned. Alternative A focused on the two railroad corridors, the power line corridor along the east side, and the AISP southern causeway. Alternative A calls for continued use of the railroad and power line corridors, but not allowing a corridor along the AISP southern causeway. The decision regarding the AISP southern causeway is consistent with the Division of Parks and Recreation's decision following the 1997 South Shore/Antelope Island Access Road Alignment Feasibility Study. Execution of public trust obligation does not automatically preclude use of sovereign land for transportation.

#### Issue 13.1 Meander line

No comments in opposition were received. Questions asked under this heading do not directly relate to the issue. Using orthophoto quad maps appears to be very promising.

#### Issue 14.1 Search and rescue

Most comments reflected support for alternative A. One comment stated the need for another breach in the causeway, rather than improving the Little Valley harbor, as the best way to improve search and rescue on the north arm.

#### Issue 15.1 Ramsar

Respondents were right to point out the incorrect interpretation of the relationship between the multiple-use mandate and the Public Trust Doctrine. Still, Ramsar designation inhibits multiple use as in the cases of dredging for marina development in Canada, mining in South Africa, and agricultural development in Hungary. Since multiple use can be consistent with the Public Trust Doctrine under certain circumstances and is a statutory directive, it is not appropriate for the state to advocate a potential barrier to multiple use until the management implications of doing so are better understood.

#### Issue 16.1 Open space

No comments in opposition were received. Comments generally support alternative A. Identification of lands for consideration by the critical lands committee continues.



#### Issue 16.2 Visual resource management (VRM)

Comments were in support of developing a VRM plan. Some expressed a need for additional mitigation. This can be considered as the plan in developed.

#### CONCLUSION/ACTION

1. There are many substantive changes to the text of the Statement of Current Conditions and Trends section of the Draft CMP, but none will affect the decision on alternatives. A revised statement will be available in the spring of this year.
2. The relationship of the Public Trust Doctrine to multiple use and legislative policies for GSL will be revised throughout the CMP to make it clear that the purposes of the trust have primacy and that other uses must meet the criterion to avoid substantial impairment of public trust uses.
3. Except as noted in #4 below, the selected alternative for the final CMP is alternative A.
4. The selected alternative for issue 6.3, BRMBR, is a modification to alternative A. Alternative A stated that USFWS and DFFSL are reviewing ownership records, that sovereign land would be made available for refuge expansion if hunting, firearm restrictions, and other restrictions on sovereign lands in the expansion area were governed by state law rather than federal refuge regulation, and that sovereign land within the old refuge would continue to be managed under federal refuge regulation. The selected alternative is that USFWS and DFFSL are reviewing ownership records, and that all sovereign lands, including any determined to be within the old refuge boundary or made available for refuge expansion, are subject to state laws.

#### ADMINISTRATIVE APPEALS:

Persons having an interest in this action may file a petition for administrative review by the executive director of the Department of Natural Resources pursuant to R652-9. The petition must be in writing, must be filed with the Division of Forestry, Fire and State Lands, and shall contain:

- a. the statute, rule or policy with which the division action is alleged to be inconsistent;
- b. the nature of the inconsistency of the division action;
- c. the action the petitioner feels would be consistent under the circumstances with statute, rule or policy, and;
- d. the injury realized by the party that is specific to the party arising from the division action. If the injury identified by the petition is not peculiar to the petitioner as a result of the division action, the executive director will decline to undertake the consistency review.

The petition must be received by the division by 5:00 pm on March 21, 2000.

APPROVED BY: Arthur W. DuFault DATE: March 1, 2000  
Arthur W. DuFault, Director



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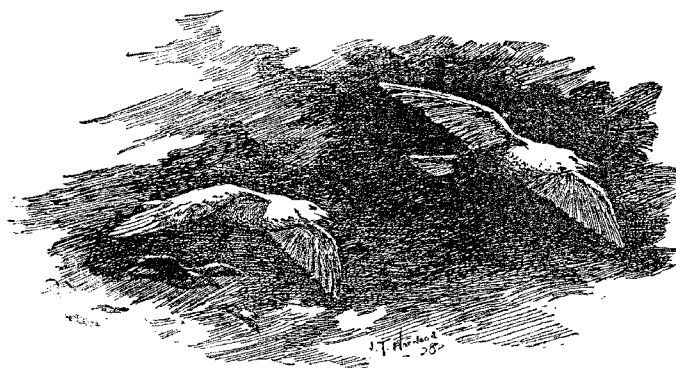
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# Introduction



## Introduction

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The Utah Department of Natural Resources (DNR) and the Utah Division of Forestry, Fire and State Lands (DFFSL) are jointly sponsoring the Great Salt Lake Planning Project to develop a coordinated natural resources management plan for the lands and resources of Great Salt Lake (GSL). Primary management responsibility for the lake's resources lies with DFFSL pursuant to Title 65A of the Utah Code, which governs management of all state lands. Specifically, Section 65A-10-8, *Great Salt Lake - Management Responsibilities of the Division*, requires the division to:

“(1) Prepare and maintain a comprehensive plan for the lake which recognizes the following policies:

(a) develop strategies to deal with a fluctuating lake level; (b) encourage development of the lake in a manner which will preserve the lake, encourage availability of brines to lake extraction industries, protect wildlife, and protect recreation facilities; (c) maintain the lake's flood plain as a hazard zone; (d) promote water quality management for the lake and its tributary streams; (e) promote the development of lake brines, minerals, chemicals, and petro-chemicals to aid the state's economy; (f) encourage the use of appropriate areas for the extraction of brines, minerals, chemicals, and petro-chemicals; (g) maintain the lake and the marshes as important to the waterfowl flyway system; (h) encourage the development of an

integrated industrial complex; (i) promote and maintain recreation areas on and surrounding the lake; (j) encourage safe boating use of the lake; (k) maintain and protect state, federal, and private marshlands, rookeries, and wildlife refuges; (l) provide public access to the lake for recreation, hunting and fishing.”

Section 65A-2-1 of the Utah Code provides; “The division [of Forestry, Fire and State Lands] shall administer state lands under comprehensive land management programs using multiple-use, sustained-yield principles.” Briefly stated, the overarching management objectives of DFFSL and DNR are to protect and sustain the trust resources of, and to provide for reasonable beneficial uses of those resources, consistent with their long-term protection and conservation. This means that DFFSL will manage GSL and its resources under multiple-use sustained yield principles (Section 65A-2-1), implementing legislative policies (Section 65A-10-8) and accommodating public and private uses to the extent that those policies and uses do not compromise public trust obligations and sustainability is maintained. Any beneficial use of public trust resources is subsidiary to long-term conservation of resources.

Although primary lake planning and management responsibilities lie with DFFSL, the other divisions of DNR also have management responsibilities for resources on and around GSL. The Division of Wildlife Resources (DWR), for example, has plenary authority for managing wildlife in, on and around the



lake. The Division of Parks and Recreation (DPR) manages Antelope Island State Park (AISP) and coordinates search and rescue and boating enforcement on the lake. The Division of Water Rights (DWRi) regulates the diversion and use of lake and tributary waters. The Division of Water Resources (DWRe) conducts studies, investigations and plans for water use, and operates the West Desert Pumping Project (WDPP). DNR divisions also regulate mineral extraction activities, conduct hydrologic research and identify and map geologic hazards around the lake.

In order to more specifically articulate DNR's management objectives for the resources of GSL, and to reconcile the diverse mandates of the divisions of DNR, the Great Salt Lake Planning Project was initiated.

The purposes of the Great Salt Lake Planning Project are:

- (1) To establish unifying DNR management objectives and policies for GSL trust resources;**
- (2) To coordinate the management, planning and research activities of DNR divisions on GSL;**
- (3) To improve coordination among DNR divisions, establish a decision-making proposal review and appeal process, develop a sovereign land management plan for the lake that balances multiple-use and sustainability, resolves issues and improves management of the lake and its resources;**

- (4) To develop a sovereign lands and resources management plan; and**
- (5) To establish processes for plan implementation, monitoring, evaluation and amendment.**

## **Planning Project Deliverables**

### **Decision Document**

This is the final Great Salt Lake Decision Document (GSLDD). It contains an overview of the planning process, the record of decision, implementation activities monitoring and research activities and goals and objectives. Public comments in response to the Draft CMP are included with their responses.

### **Resource Document**

The Draft CMP will become the supporting reference for the decision document. It will be called the Resource Document (GSLRD). The Statement of current Conditions and Trends (SCCT) section will be revised to reflect public comment recommendations (Spring 2000). This inventory and other supporting information provides the framework for the decision document. It will be revised as needed to reflect changing demand for public uses, lake issues and lake conditions.

## **History of Planning and Management of Great Salt Lake**

### **Great Salt Lake Authority (1963)**

In 1963, the Utah Legislature enacted House Bill No. 33 creating the GSL Authority, and an advisory council to the authority (Laws of Utah 1963, Chapter 161). The authority was empowered to “coordinate multiple-use of [Great Salt Lake] property for such purposes as grazing, fish and game, mining and mineral removal, development and utilization of water and other natural resources, industrial, and other uses in addition to recreational development, and adopt such reasonable rules and regulations as the authority may deem advisable to insure the accomplishment of the objectives and purposes of the act.” The bill specified that both the state Department of Fish and Game and the state Land Board would retain the powers and jurisdiction conferred upon them, subject to such reasonable rules and regulations as the authority may make to ensure the accomplishment of the objectives of the act. The authority made little progress in discharging its duties and, in 1966, the Utah Supreme Court declared that the act creating the authority was unconstitutional as it failed to define the authority’s geographical jurisdiction.

### **Re-establishment of the Authority (1967)**

The legislature cured the jurisdictional defect in 1967 when it re-created the GSL Authority (Laws of Utah 1967, Chapter 187). With legislation, the authority’s geographical jurisdiction was defined, and included the mainland,

peninsulas, islands and waters within the GSL meander line established by the U.S. Surveyor General.

The purpose of the re-created authority was to establish and coordinate programs for development of recreational areas and water conservation within GSL and its environs, and in conjunction to provide for: (1) the development of such area of Antelope Island as the authority may determine to be suitable and desirable for recreational usage, (2) testing the feasibility of the use of [Kennecott Copper] tailings in the development of GSL and its environs, and (3) the restoration and preservation of points of historical interest on Antelope Island.

A preliminary feasibility study for the recreational development of the north end of Antelope Island was prepared by Snedaker & Budd and Allred & Associates for the GSL Authority, and was submitted on June 26, 1964. In 1965, a document entitled, *A Preliminary Master Plan for the Development of Great Salt Lake Over a Period of the Next 75 Years* was prepared for the GSL Authority. This plan envisioned the use of surplus waters from the Bear River, Weber River and Jordan River drainage areas, and using Kennecott tailings material for the construction of dikes, highways and land reclamation within Farmington Bay.

### **Department of Natural Resources (1967)**

After the creation of DNR in 1967, the GSL Authority was abolished, and functions of the authority were merged into DPR.

## **Division of the Great Salt Lake (1975)**

The 1975 general session of the Utah Legislature enacted House Bill No. 23 which established a board and division within DNR to establish and coordinate programs for development of recreation areas, flood control, wildlife resources, industrial uses and conservation of GSL. The Division of Great Salt Lake (DGSL) was given the responsibility to determine the direction and implementation of all lake-related activities, working through existing DNR divisions. In addition, the division was given the following powers and duties:

(1) direct the preparation of and adopt a comprehensive plan for the lake in a manner which will assure the maximum interchange of information, ideas, and programs with affected state, federal and local agencies, private concerns, and the general public. Implement the provisions of the plan by utilizing the existing authority of the various state and local entities or agencies concerned. Weigh the policies and programs of agencies that affect the lake to ensure their compatibility with the adopted comprehensive plan. Revise and update the plan at periodic intervals. (2) employ assistants and advisors deemed necessary for the purposes of the act, (3) initiate studies of the lake and its related resources, (4) publish or authorize the publication of scientific information, (5) define the lake's flood plain, (6) qualify for, accept and administer loan payments, grants, gifts, loans or other funds for carrying out any functions under the act, (7) determine the need for and desirability of public works and utilities for the lake area, (8) cooperate with the state engineer and all upstream entities in considering the

water relationship between the lake and its tributaries, and (9) perform all other acts reasonably necessary to carry out the purposes and provisions of the act.

## **Comprehensive Management Plan (1976)**

Under the directive of House Bill No. 23, DGSL began preparation of a *Comprehensive Management Plan* in July of 1975. The plan was developed through the inter-agency technical team which was established under the terms of the 1975 legislation. The inter-agency technical team was made up of representatives from various interests, public and private, and included representatives from several divisions of DNR, Utah Department of Transportation (UDOT), county commissioners of the five counties surrounding the lake and other representatives who served on the basic committees.

The *Comprehensive Management Plan* for GSL was intended to serve as a general statement for use and management of the lake. Goals and policies based on the concepts set forth in the legislation, and as adopted by the GSL Board, served as a guide for preparation of the plan. The plan consisted of six major sections: minerals, recreation, tourism, wildlife, hydrology, and transportation. The plan for each of the sections was developed after consideration of the interrelationships of plan sections and was not intended to be a detailed development plan for private agencies or for divisions of local, state or federal government.

## **Great Salt Lake Environs Report (1976)**

The *Great Salt Lake Environs Report* was prepared in 1976 as a companion report to the *Comprehensive Management Plan*. The purpose of the report was to summarize and graphically portray the most current, accurate and reliable data available concerning land use ownership, soils, vegetation, human-made structures, access ways, freshwater and utilities lying between the water's edge on January 1, 1976, and the upper limits study line established at approximately 4212.

## **Division of State Lands and Forestry (1979)**

In 1979, DGSL was eliminated, and the staff functions for the management of GSL were transferred to DNR. Later, management was administratively delegated to the Division of State Lands and Forestry (DSLFF), now known as DFFSL.

## **Great Salt Lake Contingency Plan (1983)**

In 1982, the water level of GSL began a rapid rise which prompted DSLF to draft the *Great Salt Lake Contingency Plan*. This plan was designed to meet the legislative mandate for maintaining the water level of GSL below 4202, and deals with background, analysis and recommendations for influencing both the high and low levels of GSL. The contingency plan states: "It is anticipated that lake levels will peak at approximately 4203 in 1983 with potential resultant damages of \$20 to \$30 million." Ironically, the lake peaked at approximately 4205 that year, and continued upward to nearly 4212 in

1987, with estimated capital damages exceeding \$250 million (Bureau of Economic and Business Research, 1983). The causeway was breached in 1984 to lessen flooding impacts occurring in the south arm. The WDPP was built in 1986-87 and operated from April 1987-June 1989.

## **Great Salt Lake Advisory Council (1988)**

In 1988, the Great Salt Lake Advisory Council (GSLAC) was created by legislative action to advise the Board of State Lands and Forestry through DSLF, which was designated as manager of the lake. Great Salt Lake Technical Team (GSLTT) was given statutory authorization at the same time.

## **General Management Plan, Great Salt Lake (1988)**

As GSL reached its historic high water level of 4211.85 in 1986 and again in 1987, a five-year *General Management Plan, Great Salt Lake* was prepared for GSLAC. The general management plan, and the "Beneficial Development Area" (BDA) concept developed by the Utah Division of Comprehensive Emergency Management, was a cooperative attempt to outline the best strategies available to avoid flood-related impacts to those utilizing the lake under its high-water and expected near-future conditions for a variety of purposes. Both the plan and the BDA concept were delivered to the five counties bordering the lake for adoption, and were adopted by the Federal Emergency Management Agency.

## **Division of Sovereign Lands and Forestry (1994)**

In 1994, management responsibilities for school and institutional trust lands were placed with the newly created School and Institutional Trust Lands Administration (SITLA). The Board of State Lands and Forestry and the GSLAC were eliminated, and the Sovereign Lands Advisory Council (SLAC) was created to advise the newly-named DFFSL. DFFSL retained management responsibility for public trust lands and resources, and was able to devote more time to planning and management of these lands as public-trust lands, with a broader view of how the lake's many trust resources are interrelated.

## **Great Salt Lake Comprehensive Management Plan (GSL CMP 1995)**

Completed in 1995, the *Great Salt Lake Comprehensive Management Plan - Planning Process and Matrix* was prepared by the GSLTT for DFFSL and DNR. The goal of the plan was to, "... provide needed information and guidance in the form of recommendations to federal, state and local governments, and recommended legislation to the state legislature to facilitate and enhance management of GSL and its environs to assure protection of the unique ecosystem of the lake while promoting balanced multiple-resource uses."

As described in its goal statement, the 1995 plan includes analyses of lake management issues, and makes recommendations on those issues to local, state and federal government. Many of the recommendations have been acted upon by divisions of DNR, including development of the Mineral Leasing Plan (MLP) by DFFSL. Notable

exceptions include actions on WDPP and water quality standards. The fate of recommendations involving local government has not been fully analyzed or reported.

## **Mineral Leasing Plan (MLP)(1996)**

As an outgrowth of the 1995 plan, DFFSL announced the withdrawal of sovereign lands from minerals leasing as part of a comprehensive planning process for management of minerals on those lands. Included were GSL, Utah Lake and the Jordan River, and portions of Bear Lake, Bear River, Colorado River and Green River. To accomplish its planning and management mandates, DFFSL is creating mineral leasing plans for each area. The MLP is the first of these plans to be completed. This document reviews the history of mineral ownership and leasing, inventories mineral resources and examines the existing conflicts among resources on the lake. The MLP zones the lake bed for mineral commodity production and specifies new mineral leasing procedures.

## **Current Department of Natural Resources Management Responsibilities**

### **Division of Forestry, Fire and State Lands**

DFFSL is "...the executive authority for the management of sovereign lands..." in Utah, including the sovereign lands of GSL. Title 65A of the Utah Code, entitled "State Lands", establishes the division and the Forestry, Fire and State Lands Advisory Council, and sets forth the powers and responsibilities of the division and council. Section 65A-10-8

establishes the division's responsibility to prepare and maintain a management plan for GSL under paragraph (1), and establishes other responsibilities for the lake as follows:

- “(2) Employ personnel and purchase equipment and supplies which the legislature authorizes through appropriations for the purposes of this chapter.
- (3) Initiate studies of the lake and its related resources.
- (4) Publish scientific and technical information concerning the lake.
- (5) Define the lake's floodplain.
- (6) Qualify for, accept and administer grants, gifts, or other funds from the federal government and other sources, for carrying out any functions under this chapter.
- (7) Determine the need for public works and utilities for the lake area.
- (8) Implement the comprehensive plan through state and local entities or agencies.
- (9) Coordinate the activities of the various divisions within the Department of Natural Resources with respect to the lake.
- (10) Perform all other acts reasonably necessary to carry out the purposes and provisions of this chapter.
- (11) Retain and encourage the continued activity of the Great Salt Lake Technical Team.”

### **Division of Wildlife Resources**

Title 23 of the Utah Code establishes DWR and the Wildlife Board and establishes their duties and powers. Section 23-14-1 provides, “The Division of Wildlife Resources is the wildlife authority for Utah, and is vested with the functions, powers, duties, rights and responsibilities provided in this title and

other law.” The section goes on to provide, “Subject to the broad policy making authority of the Wildlife Board, the Division of Wildlife Resources shall protect, propagate, manage, conserve, and distribute protected wildlife throughout the state.”

The division manages wildlife areas on GSL, regulates hunting, manages all protected wildlife species and regulates the commercial harvest of brine shrimp from the lake. The legislature has authorized the division to utilize all or parts of 39 townships of sovereign lands on the lake for the “creation, operation, maintenance and management of wildlife management areas, fishing waters, and other recreational activities” (Section 23-21-5, Utah Code). Not all lands so authorized are now under management by the division for the authorized purposes.

### **Division of Parks and Recreation**

Chapter 63-11 of the Utah Code establishes the division and the Board of Parks and Recreation, and sets forth their responsibilities. The division manages AISP, Willard Bay State Park, and the Great Salt Lake Marina (GSLM) on the south shore of the lake.

DPR is also directly responsible for boating enforcement on GSL. DPR personnel also work closely with five county sheriff offices (Box Elder, Davis, Salt Lake, Tooele, Weber) to respond to search and rescue needs on the lake.

### **Division of Water Rights**

DWRi regulates the appropriation and distribution of water in the State of Utah, pursuant to Title 73 of the Utah Code. The State Engineer, who is the director

of DWRI, gives approval for the diversion and use of any water, regulates the alteration of natural streams and has the authority to regulate dams to protect public safety. All diversions from the lake for all purposes, including mineral extraction by evaporation, require the prior approval of the State Engineer. Any dam or dike placed in the lake requires consultation from the division.

### **Division of Oil, Gas and Mining**

The Division of Oil, Gas and Mining (DOGM) is the regulatory agency for mineral exploration, development and reclamation on GSL, pursuant to Title 40 of the Utah Code. This regulatory role is conducted in close coordination with DFFSL.

### **Utah Geological Survey**

The Utah Geological Survey (UGS), is responsible for collecting, preserving, publishing and distributing reliable information on geology, brine and mineral resources and geologic hazards related to the state, including GSL. UGS is also responsible for assisting, advising and cooperating with state and local agencies and state educational institutions on all subjects related to geology.

### **Division of Water Resources**

The mission of the Utah Board and DWRe is to direct the orderly and timely planning, conservation, development, protection and preservation of Utah's water resources used to meet the beneficial needs of Utah citizens. Although the division does not have direct regulatory responsibilities on GSL, it conducts studies, investigations and planning for water use, and is responsible

for maintenance and operation of the WDPP.

## **Other State Agencies**

### **Department of Environmental Quality**

#### *Division of Environmental Response and Remediation*

Federal and state laws require prompt reporting of environmental incidents. Depending on the nature of the incident reports may be made to specific regulatory agencies, but in all cases the Division of Environmental Response and Remediation may be contacted to forward the report to the appropriate agency. Follow-up activity often involves preparation of a written report summarizing the incident and remedial actions taken.

#### *Division of Water Quality*

The Utah Water Quality Board and the Division of Water Quality (DWQ) have the responsibility to maintain, protect and enhance the quality of surface and ground water resources. The board is charged with developing programs for prevention and abatement of water pollution. The board also is responsible for: establishing water quality standards throughout the state; enforcing technology-based, secondary treatment effluent standards or establishing and enforcing other more stringent discharge standards to meet in-stream standards; reviewing plans, specifications and other data relative to waste-water disposal systems; establishing and conducting a continuing planning process for control of water pollution.

DWQ's mission is to protect public health and all beneficial uses of water by maintaining and enhancing the chemical, physical and biological integrity of Utah's waters. Objectives designed to achieve this mission are:

- Classify waters according to beneficial use and set water quality standards, including numeric and narrative criteria, to protect those uses;
- Achieve full compliance with treatment and water quality standards by ensuring the adequacy of planning, design, construction, and operation of municipal and industrial wastewater standards through appropriate technical assistance, regulation and enforcement;
- Develop and update pertinent regulations, policies, and strategies;
- Generate a comprehensive water quality data base;
- Conduct water quality management planning and continue to implement an effective statewide non-point source control program;
- Implement the ground water quality protection strategy.

### *Division of Air Quality*

The Division of Air Quality (DAQ) facilitates Air Quality Board members as proactive participants in addressing air pollution issues and in shaping environmental policy. The following objectives support DAQ's mission:

- Involve others in the process; develop state implementation plans (SIP), issue permits, compliance and other public process activities.
- Partner with other in-state government agencies to develop and implement programs for the

protection of air quality statewide and achieve and maintain acceptable air quality along the Wasatch Front.

- Maintain delegation of federal air quality programs by developing appropriate plans, programs, policies, procedures and rules.
- Influence state, regional and national policy through active involvement with the legislature and policy making organizations.
- Increase public awareness to educate the general public and businesses on emissions reduction.

## **State Ownership and Trust Responsibilities**

Under English common law, the Crown held title to all lands underlying navigable waterways, subject to the Public Trust Doctrine. Following the American Revolution, title to such lands in the U.S. vested in the 13 original colonies. Under the Equal Footing Doctrine, fee title to those lands also vested in each state subsequently admitted to the Union, upon admission. Utah's public trust lands, known as "sovereign" lands, lie below the ordinary high water mark of navigable bodies of water.

The boundaries of sovereign lands are established by the location of the ordinary high water mark of a water body. For the ocean and most rivers and lakes, the ordinary high water mark is relatively constant, and can be identified reliably from year to year. Because rivers and streams establish many important boundaries and can move over time, the common law doctrine of reliction and accretion holds that slow, gradual movement of a river or stream course over time will result in relocation of the



property boundary to follow the movement. Sudden changes in course, as by flooding or other upset, will not result in the relocation of the property line.

In 1959, the Bureau of Land Management (BLM) challenged the state's claim to much of the shoreline of the lake, arguing that the declining lake level was resulting in the "reliction" of shore lands, and the relocation of the boundary between state and adjacent federal land, to BLM's advantage. In 1976, the U.S. Supreme Court determined that the state owns of all the lands, brines and other minerals within the bed and waters of the lake, and all shore lands located within the officially surveyed meander line.

### **The Surveyed Meander Line**

The surveyed meander line is not, however, a constant elevation around the lake. The meander line was surveyed in segments between 1855 and 1966, during which time the water level of the lake fluctuated. Different segments of the line therefore lie at different elevations. The elevation of the meander line generally ranges between about 4202 and 4212 above mean sea level. In some locations the meander line runs across topographical features of higher elevation substantially inland of the shoreline. Regardless of its location relative to the water's edge and lake level, the officially surveyed meander is the adjudicated, fixed and limiting boundary between sovereign land and upland owners. (See Exhibit 1.)

The surveyed meander line is not usually identifiable on the ground without the aid of surveying or global positioning system equipment. To avoid trespass situations, DFFSL requires applicants to provide surveyed legal descriptions for leases and

easements on GSL. Upland owners likewise should have the meander line located by survey whenever they need to know the location of the boundary between sovereign land and adjoining land.

### **The Public Trust over Sovereign Lands**

Under A.D. 6th Century Roman law, and perhaps earlier, the air, sea and running waters were common to all citizens and the separate property of none. All rivers and ports were public and the right of fishing was common to all. Any person was at liberty to use the seashore to the highest tide, to build a retreat on it, or to dry nets on it, so long as they did not interfere with the use of the sea or beach by others. Although the banks of a river could be privately owned, all persons had the right to bring vessels to the banks, to fasten them by ropes and to place any of their cargo there. The influence of Roman civil law carries forward through English common law to today's Public Trust Doctrine, which recognizes the special public interest in rivers, lakes, tidelands and waters. The Public Trust Doctrine "is founded upon the necessity of preserving to the public the use of navigable waters free from private interruption and encroachment" (Illinois Central R.R. Co. V. Illinois, 1892).

Sovereign lands are held in trust by the state for the benefit of the public. The "trust" is a real trust in the legal sense of the word. There is a clear and definite trust corpus (the lands, waters and living resources therein), clear beneficiaries (the public), elected and appointed state officials with fiduciary responsibilities in managing the trust corpus and a clear purpose for the trust. The Public Trust Doctrine establishes the right of the

public to use and enjoy these trust waters, lands and resources for a wide variety of recognized public uses. The original purpose of the doctrine was to assure public access to navigable waters for commerce, navigation and fishing. That has evolved, in some states, to include modern uses such as recreation, environmental protection and preservation of scenic beauty. Implementation of multiple-use and other legislative policies for GSL is subject to consistency with public trust obligations, and must meet the criterion to avoid substantial impairment of public trust uses.

The Public Trust Doctrine has been, and will continue to be, flexible to accommodate changing demands for public trust resources. There is no hierarchy of uses protected under the doctrine, but when there are competing public benefits, the public trust requires that those benefits that best preserve the purpose of the public trust under the circumstances should be given a higher priority. The Utah Legislature has assigned responsibility for management of sovereign lands, including GSL, to DFFSL. As trustee, DFFSL must strive for an appropriate balance among compatible and competing uses specified in statute while ensuring that uses protected under the Public Trust Doctrine have primacy. It is desirable to maintain the option to adjust the allocation of public trust resources in response to changes in demand and changes in administrative and legislative policy.

Sale of sovereign lands is generally precluded by the constitutionally-imposed duty of the state to manage sovereign lands for the public. The general exception to this prohibition is if the disposition itself is in the furtherance

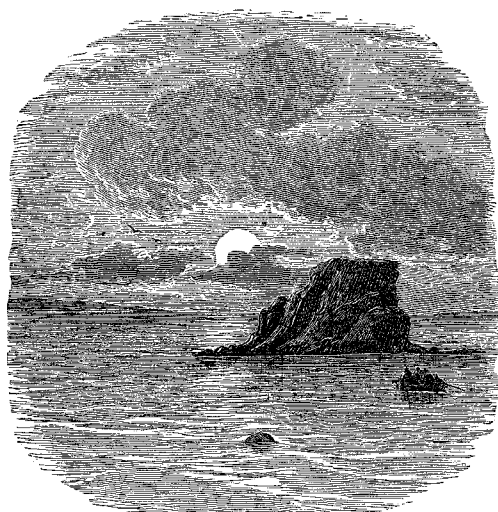
of the public interest. The Utah Legislature has chosen to protect the public interest when sovereign land is sold or leased by requiring that "...the lease, contract of sale, or deed shall contain a provision that:

- (a) these lands shall be open to the public for the purpose of hunting, trapping, and fishing upon them during the lawful season, except:
  - (i) where the lands are situated in incorporated or unincorporated towns or cities; and
  - (ii) when it is mutually agreed by the director of the Division of Forestry, Fire, and State Lands and the Wildlife Board that the lands may be leased or sold for exploration or development of minerals including oil and gas; and
- (b) no charge may be made by the lessee, contractee, or grantee to any person who desires to go upon the land for the purpose of hunting, trapping, or fishing."

Even so, there are circumstances under which a lessee or grantee must be able to restrict public access to fully enjoy the rights granted under a lease, permit or sale. Examples include restrictions during mining operations, construction of improvements, harbor operations, military operations and access to personal property. The test of any disposition of an interest in sovereign land is that it must be done without any substantial impairment of the public interest in the lands and waters remaining. Once again, this involves a judgement call on the degree of impairment of the trust resource or the public's trust rights therein.

**Notes:**

# Rationale



## Rationale for the Selected Alternative

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### **1.1 Define the GSL flood plain for planning purposes.**

The 4217 elevation is based upon the most recent historic high lake level of approximately 4212, with the addition of three feet for wind tide and two feet for wave action. DNR believes it is reasonable to assume that the lake will again reach 4212 during the lifetime of most facilities located near the lake. The practical reality regarding flood plain management is that DNR's influence beyond the meander line is limited to the power of persuasion. DNR's power of persuasion may have been enhanced by the availability of state funds to help local government recover after the 1980s flooding. Planning and zoning are a function of local government, not state government. Development above the surveyed meander line will continue to be controlled through local planning and zoning functions irrespective of what DNR calls the flood plain.

### **1.2 Develop strategies to deal with a fluctuating lake level.**

The basic premise is that lake level is far more a function of climate and precipitation than any human influences. Upstream diversions, inter-basin water transfers, and WDPP have some effect on lake level, but are not effective lake control measures. Understanding and accepting that lake level fluctuations will occur, that there is little anyone can do to limit fluctuations, and that shoreline habitat has and will continue to change in response to changing lake levels, DNR will respond to lake level fluctuations.

Four-foot zones were used in the 1995 plan to characterize potential flood damage and to describe the relative amount of time the lake is at a certain level. Given the extent of annual fluctuations, DNR sees no particular advantage in using a different elevation zone classification. Other entities may take into account DNR actions when planning their actions.

### **1.3 Determine the policy for WDPP operation.**

The 1995 plan recommended the WDPP begin operation when the GSL elevation exceeds 4205. In 1995, the feasibility of extending the inlet channel and other related modifications was studied. Costs were estimated. In the absence of an emergency, DNR was discouraged from pursuing funding for modifications to the WDPP. Also, institutional factors such as those related to Hill AFB Bombing and Gunnery Range discouraged implementation of the 1995 plan recommendation.

The GSL CMP has re-addressed the WDPP and has recommended to extend the inlet canal and resolve the return brine channel with Hill AFB, but start pumping at 4208. The relatively quick recovery of habitat and the renewal of vegetation after the high water years brought about an increased appreciation for lake level fluctuations.

DNR has consulted lake industries, UDOT, UPRR, and has estimated the differences in damages between not pumping, beginning to pump at 4205 and 4208. The cumulative damage numbers are in thousands.

Lake Elevation	Current Situation	Alt. A	Alt. B	Alt. C
4205	\$8,438	\$8,438	\$8,438	\$8,438
4208	\$51,731	\$46,281	\$51,731	\$22,338
4210	\$63,756	\$55,341	\$64,256	\$30,948
4212	\$95,056	\$91,976	\$223,306	\$62,293

Economically, it is recognized that alternative C minimizes the damage and cost to GSL industry and other structures and facilities around the lake. The reduction in damages is greater by beginning pumping at 4205 than waiting until 4208. However, GSL is a physical system composed of many natural features to be taken into account under the Public Trust Doctrine. Economics alone can not be the deciding factor regarding WDPP operation. Pumping through a full cycle is paramount because it minimizes the deposition of salt on the west desert. The costs of modifying the WDPP to operate at 4205, the increased difficulties of returning minerals from the West Desert Pond if pumping were to begin at 4205, the institutional factors, and operating time considerations (less than 10 percent of the time for 4208) provide the rationale for selecting 4208. The selected alternative takes into account the lake's natural features and best corroborates a balanced approach to GSL management.

#### **1.4 Declining flows at Locomotive Springs WMA.**

No continuous, representative discharge records exist for the springs. This data will be collected to determine if the flow to the springs is actually declining due to human interference. It would not be prudent to plunge into a "solution" to the issue of spring flow without a good

understanding of how the flow system functions. Water supplying the springs is thought to originate in the alluvial aquifers of the Holbrook-Snowville flow system to the north, or the deep regional carbonate aquifer which underlies western Utah and eastern Nevada, or a combination of the two. Studies to determine how much water each system contributes are essential to determine if a problem exists and to craft an effective mitigation and/or remediation plan. To be valid, these studies require the cooperation, or at least the acquiescence, of the State of Idaho. DWRi has sent two letters to the State of Idaho on this matter, neither of which has received a response.

#### **1.5 Administration of water rights and supply in the GSL drainage basin.**

Many of the drainage basins tributary to the lake are closed or restricted for new appropriations of water. As a result, the acquisition of water rights to supplement activities in and around the lake will proceed on a willing seller/willing buyer basis. Planning activities dealing with water rights above the lake's meander line are beyond the scope and authority of this planning effort.

### **1.6 Determine state policy regarding creating large freshwater embayments like Lake Wasatch, Lake Davis, and other inter-island diking proposals.**

Inter-island diking and freshwater embayment proposals have been funded and studied to varying degrees over the years. None of the proposals have been implemented due to the lack of political and financial support. DNR does not support the proposals because of extensive impacts on sovereign land, lake resources and risk associated with geologic hazards. The locations of the proposed projects are on lands the legislature has authorized DWR use for wildlife purposes. The likelihood that impounded water will be suitable for its intended use is questionable. DEQ/DWQ agrees with this assessment. There is a variety of other reasons mentioned in the Draft CMP (pages 39-40). The selected alternative does not permanently preclude developments of this kind, but it requires a plan amendment before projects can be approved. The amendment process ensures extensive public review of proposals.

#### **2.1 Identify the salinity management regime for GSL.**

DNR acknowledges the effect human-made structures have on GSL. Evaporation ponds can increase salinity to the point that shoreline habitat is lost. Causeways affect the interchange of brines: (1) Farmington Bay is less saline than it would be under natural conditions for a given lake level; (2) the north arm (Gunnison Bay) is more saline and the south arm (Gilbert Bay) less saline than they would be under natural conditions for a given lake level. The WDPP deposited a substantial volume of salt on the west desert, thereby affecting the salt balance in the lake. Bird refuge and Wildlife Management Area (WMA) dikes

impound fresh water and prevent lake water from reaching what would be natural shoreline areas. In actively managed areas, such as solar ponds and WMAs, the desired effect is achieved by influencing salinity. All of these effects are acceptable in the context of public trust management and multiple-use framework for GSL as long as sustainability is not jeopardized and there is no substantial impairment of protected public use.

Much of the sustainability question is a social, economic and political matter and deals with the acceptability of varying degrees to which natural systems are impacted. But there must be a standard that constrains the range of social and political decision-making. The measure of sustainability DNR chooses to use, and against which future management actions will be evaluated, is the degree to which uses protected under the Public Trust Doctrine are judged to be impaired or enhanced. This is against a backdrop of preservation of most of GSL as a natural body of saline water. A natural body of saline water is defined as water with salinity (average of the entire water column) within the range of salinity variation over the last 150 years. This is the lake's historical range.

In choosing among alternatives, the fundamental concern is not the particular economic impact to a specific industry, company or activity. It is not the relative advantage of companies competing with each other. It is not to afford relief to south arm industries at the expense of north arm industries, nor to protect any special advantage of north arm industries against the complaints of south arm industries. The fundamental parameter is the public interest. The public interest is statewide, and in some respects the lake

serves national and international interests. Protection of the lake's ecology will serve the public interest.

The trend for salinity in the south arm of the lake is heading outside the historical range. This is a consequence of human disruption in the form of the northern railroad causeway and WDPP. In DNR's judgement, salinity levels outside historical variation behind project-specific dikes and impoundments are acceptable because the change in salinity is the desired effect. The south arm, however, is too much of the lake to allow it to exceed historical salinity variation. Salinity in Farmington and Bear River bays can be addressed in WMA plans.

DNR has concluded that the permeability of the northern railroad causeway has decreased. (See Draft CMP Appendix I.) Prior to the 1980s high lake level, the causeway fill provided 70 percent of the brine interchange, the culverts 30 percent. Compaction of the fill, introduction of organic and inorganic fine material over time and the addition of fill required to keep the causeway above rising water in the 1980s has significantly decreased permeability. Removal of some 600 million tons of salt from GSL by WDPP has contributed to the south arm salinity concern. U.S. Geological Survey (USGS) and DWRe modeling (See Draft CMP Appendix H.) shows that approximately 80 percent of the salinity difference between the 1980s to the present is attributable to decreased permeability of the causeway. The remaining 20 percent of the difference is attributable to WDPP. But whatever the cause, something must be done to address decreasing south arm salinity.

The salinity concern may be alleviated to some degree by operating WDPP through a full cycle to return some of the salt deposited in the west desert, but in the absence of a flooding emergency, WDPP modification, startup and operational costs are prohibitive. The most cost effective, long-term remedy is causeway modification to increase the exchange of brine. To compensate for the loss of salt to the West Pond and decreased causeway permeability, the causeway breach will be deepened about four feet to its original design depth of about 4195, or perhaps a little deeper. Structural integrity of the bridge will not be affected by this excavation. The culverts will be kept clean by the railroad. The effect of the causeway modification on south arm salinity will be monitored. The potential for additional openings in the causeway will be studied in the event DNR determines that open culverts and a deepened breach are not sufficient to keep south arm salinity within its historical range.

As noted in the ecosystem section of the Draft CMP, lack of full scientific certainty should not be used as a reason not to initiate measures to prevent environmental degradation. A precautionary approach is prudent. Implementation of the selected alternative may be the first or final step in addressing salinity. The continuing studies under DWR's Great Salt Lake Ecosystem Project (GSLEP) and a few years of monitoring the effect of breach modification will help determine if additional measures are needed to reach the desired historic salinity levels.

## **2.2 Account for the locations and quantities of salts in the GSL system.**

In light of lake salinity issues and disputes over ownership of salt in the



lake system, it is important to know the locations and amounts of GSL salts. An accounting of all salts in the lake system can serve as a baseline for future studies. The selected alternative does not set the stage for assessing royalties on waste salts.

### **3.1 Develop a strategy to ensure water quality protection for the GSL ecosystem.**

Existing water quality narrative standards for discharges to the lake and permits are determined on a case-by-case basis. The general policy is stated as follows "to the extent feasible, no pollutants should be delivered to the lake in amounts that result in concentrations great than those already present in the lake." This policy may not prevent gradual water quality degradation over time. Because GSL is a terminal basin, pollutants to the lake will gradually increase this baseline condition over time. Salinity, temperature, lake currents, contaminants in lake sediments and many other factors play a role in altering the chemical nature and the physical conditions that might increase heavy metals bioavailability. Impacts resulting from non-point source and point source pollutants on wildlife could impair management objectives.

DNR and cooperators will monitor water quality to ensure protection of public trust resources through improved coordination with DWQ. Limited financial resources will be focused on improving knowledge of lake chemistry and ecology to better understand lake processes and to better determine appropriate effluent limits. This will help identify serious problems.

Nutrient loading in GSL wetlands and dynamics in the open water are not well understood. Coordination will help identify management objectives to investigate nutrients and other potential water quality problems, help in developing studies and in determining management response.

### **3.2 Determine GSL wetland policy.**

Federal regulations provide for the bulk of wetland protection measures and are generally adequate. Actions in non-jurisdictional wetlands and actions such as excavation, grazing, burning and chemical application that are not covered by federal regulation may affect important wetland resources. DNR will take advantage of the opportunity to consider these actions in a policy framework to allow an added measure of protection.

### **4.1 Protect public trust resources (relates to air quality impacts).**

Improved coordination is needed to improve the assessment of impacts to public trust resources and for remedial response. Air quality is also important in regard to resource protection and other multiple-use management objectives. Air quality degradation could alter resource allocation decisions in the future (where and how particular activities are allowed) and impact existing resources and activities such as recreation and viewshed values.

### **5.1 Identify strategies to preserve and maintain habitat and wildlife on GSL in order to preserve the integrity of this ecosystem.**

The GSL wildlife values have been maintained previously because the lake and surrounding marshes have been inaccessible to people or undesirable for

recreation activities relative to other areas of Utah. People see the lake every day but rarely, and in some cases never, go there. Industrial development has had a substantial impact on the lake. Creation of dikes to impound brines in large shallow basins has substantially reduced wildlife values on significant acreage. The lack of knowledge about the wildlife values lost, and lack of appreciation for those losses because they occurred in areas seldom visited by people, are reasons for the occurrences. DNR believes a greater effort is needed to understand the wildlife functions within the ecosystem and manage to protect the existing values, mitigate the losses when practicable, and extend greater protection than has occurred historically.

#### **6.1 Determine the appropriate mix of sovereign land classifications.**

Under the selected alternative, mineral lease zones, reinforced wildlife considerations, and the diking policy, multiple use can be accommodated without significant impairment of protected public uses. Sovereign land classifications are very similar to those in the 1995 plan.

With exception of existing mineral leases in Bear River Bay, a zone managed by the DPR around Antelope Island and a stretch of beach area from old Saltair to Black Rock, sovereign land in the east side of the lake is managed for resource preservation (this includes WMAs). As private land development moves closer to the lake, sovereign land habitat increases in importance. The proposed classification protects habitat and vistas on the east side.

While little development on the west shore is expected, it is available for development uses. This is where potential conflicts with wildlife and viewshed are fewer. The significant exception is resource preservation zones in the north part of the north arm, and around Hat, Gunnison and Dolphin islands, which are the relatively more important wildlife use areas on the west side. The Rozel Point and West Rozel oil fields are managed for development, as are shoreline areas suitable for brine shrimp harbors.

Much of the lake is classified as open for consideration of any use, but developments in open water areas are not expected. By protecting the more important wildlife areas, protecting existing mineral leases, allowing for development of known mineral resources, and allowing for intensive recreation development somewhere along the south shore, a reasonable mix of sovereign land classifications is provided.

#### **6.2 Consider geologic hazards in all sovereign land use decisions.**

Statute requires that DFFSL disclose any known geologic hazard affecting leased property. UGS routinely identifies geologic hazards through the RDCC process when UGS is apprised of proposed state actions submitted to RDCC by DFFSL. DFFSL routinely passes on the information to lessees. There is little if any follow up. Under the selected alternative DFFSL will follow up by requiring a site-specific analysis of potential hazards and consulting with UGS regarding the adequacy of proposed mitigation. This is a logical result of the requirement to disclose hazards. It makes little sense to

disclose known hazards but then require nothing further. The selected alternative ensures full consideration of geologic hazards.

### **6.3 Bear River Migratory Bird Refuge expansion.**

Expansion of BRMBR is consistent with wildlife use for specific, legislatively-designated sovereign land. The conflict lies in regulation of hunting and application of other state laws. Sovereign land technically open to hunting under state law may be closed to hunting by BRMBR, and hunting may be governed by BRMBR under federal regulation. Most of the refuge below the meander line is sovereign land and is subject to state law. It is appropriate for DFFSL, as trustee, and DWR, as the state wildlife authority, to be involved in resource management decisions. DNR is working with USFWS on issues relating to management of lands below meander.

### **6.4 GSL diking policy.**

Given the increased appreciation for habitat-related beneficial effects of fluctuating lake levels, the objective is to ensure that on-site and off-site impacts will be taken into account when diking activity is planned. The policy will apply in-house as well, for example state WMA dikes.

### **7.1 Review the Mineral Leasing Plan zones.**

The 1996 MLP was prepared under existing rule with associated public review and comment. The MLP precludes new leasing of the east side of the lake. This restriction was based on the importance of recreation and wildlife values and low mineral potential in the area. An exception was

made for salt leasing potential (suitable ponding site) at the south end of the lake. This area is available for salt leasing under special stipulations. With known oil fields and potential ponding sites available for leasing, important recreation and wildlife areas not available for leasing, and operational constraints over much of the rest of the lake, legislative policy to encourage the use of appropriate areas for extraction of brine, minerals, chemicals, and petrochemicals is implemented.

### **7.2 Review Mineral Leasing Plan policies.**

Implementation of MLP policies has resulted in the desired effect. The nomination process works well for identifying special concerns, determining lease stipulations in response to those concerns, and making the stipulations known at the time the lease is offered for competitive bid. Acreage under lease in important wildlife areas has been reduced.

### **8.1 Provide additional recreational opportunities in response to specific demands or needs, consistent with the protection of trust resources.**

This issue deals exclusively with recreational boating and the facilities to accommodate this use. The Great Salt Lake Marina and Antelope Island Marina currently provide access to the lake. DNR anticipates no further public investment in marina facilities. DNR will encourage private investment to provide additional marina facilities, if needed. The lessee of the Black Rock commercial marina is willing to open that facility, when built, to recreational use if requested by DPR.

## **8.2 Navigability on GSL.**

Limited recreational and commercial boating access into the north arm from the south arm is available through the northern railroad causeway breach near Lakeside. Any effort to breach the northern railroad causeway to facilitate full navigational access between the south and north arms would be very costly. Full navigational access can be accomplished in one of two ways: 1) breach the causeway and construct a bridge that will accommodate high vessel passage; or 2) breach the causeway and abandon railroad traffic across it. Any breach in the causeway designed to fully accommodate navigational access without disrupting railroad traffic will need to occur in water depths sufficient for deep keel boat passage. The bridge system spanning the breach must not only allow railroad traffic across the causeway, but also have sufficient height or mobility to allow passage of sailboats with tall masts. The geology of the lake bed in the deeper waters is such that engineering and constructing a bridge will be extremely expensive, if not impossible. The second scenario for full navigational access circumvents the geologic and engineering impediments associated with constructing a bridge, but requires the railroad to abandon the causeway and reroute the displaced train traffic. This alternative is obviously very damaging and costly to the railroad and those who use rail transport.

Although the causeway acts to restrict, through size limitation, the number of vessels capable of navigating into the north arm, sensitive ecological interests are buffered by the reduced access. The small islands located in the north arm

provide critical habitat and nesting grounds for American white pelicans and other shorebirds. Gunnison Island hosts one of the three largest nesting colonies of American white pelicans in North America. The pelicans and other shorebirds rely heavily upon the habitat provided on these isolated islands during the annual nesting season, and even minimal human presence has shown to disrupt them to the point that they move off the island to less productive habitat.

## **9.1 Develop opportunities on sovereign land for off-highway vehicles.**

A public planning process conducted by the ad hoc West Box Elder Access Team under the auspices of Box Elder County identified sovereign land in T11N, R11W as suitable for OHV use. This is consistent with OHV designations for adjacent upland. Some DNR divisions and federal agencies participated on the team. Box Elder County passed the ordinance to implement the access team's recommendation. DNR will open lands as identified in the access management plan. This is not an irreversible or irretrievable commitment of resources. Monitoring and enforcement are part of OHV management in the area. If monitoring shows unacceptable resource damage, OHV use on this sovereign land may be modified or terminated. The Box Elder plan addressed OHV problems related to resource damage on public and private land at Monument Point and Salt Wells areas. Opening sovereign land in T11N, R11E, as part of a multi-jurisdictional plan, is a reasonable tradeoff against the difficult enforcement problems on sovereign

land elsewhere in west Box Elder County.

### **9.2 Improve recreational opportunities and access.**

The specified locations are not exclusive. They are locations which, based on existing visitation, scoping comments or expressions of interest at public meetings are viable access points. There are potential constraints or conflicts to be resolved for some locations. The selected alternative is an expression of DNR's interest in pursuing additional opportunities.

### **9.3 Improve education and interpretation opportunities.**

The specified locations and potential cooperators are not exclusive. Selected locations are based on existing visitation, scoping comments or expressions of interest at public meetings, are viable interpretation and education opportunities. There are potential constraints or conflicts to be resolved for some locations. The selected alternative is an expression of interest in pursuing these opportunities.

### **9.4 Hunting conflicts on sovereign land.**

The selected alternative will clarify where waterfowl hunting will be allowed near Antelope Island. Working with the Utah Air Boat Association and other publics, a 100-yard buffer was determined to be an acceptable buffer to reduce conflicts near developed areas on the island. The posting of no hunting areas around the GSLM has addressed conflicts there.

### **10.1 Identify an acceptable mix of DNR's statutory requirements in regard to commercial and industrial use of the lake's resources.**

Under the selected sovereign land classifications, mineral lease zones, reinforced wildlife considerations and the diking policy, DNR believes GSL is large enough to accommodate the legislative policy regarding specified multiple uses without substantial impairment of protected public uses. No new commercial or industrial use of GSL and its resources is anticipated, nor is there reason to expect that existing commercial and industrial uses cannot operate within the constraints of sovereign land classifications and mineral lease zones. If a proposed new use cannot be accommodated under existing classifications or zones, a plan amendment will be considered. If an amendment is proposed, it will include an offsetting change in classification or zone. The offset will be based on factors including acreage, function and public trust value. Under this amendment approach, adequate mitigation is ensured until a new planning cycle is completed.

### **10.2 Open specific areas of the lake for commercial harbors for the brine shrimp industry.**

At a public meeting on June 16, 1995, DNR's brine shrimp task force announced that no new exclusive special use leases for harbors will be issued and that the AIM will be available for commercial use until it becomes incompatible with recreational use or adequate alternative facilities are available. These policies remain in effect.

The south arm sites were identified by the task force as dispersed strategic locations where water depth is suitable, access is reasonably available and conflicts with public trust resources are relatively minimal. The north arm sites are locations where harbors already exist. Additional harbor development at these locations should not result in significant adverse effects. The intent of the harbor policy is to eliminate access to the lake as a competitive factor in the brine shrimp industry and to encourage its members to work together on harbor construction in order to concentrate development and confine impacts from harbor construction to a few strategic locations.

### **10.3 Establish policy regarding unauthorized construction below meander line for the development of harbors, ramps or other structures.**

DNR will link penalties for violations of one DNR agency's statutes and rules to the full range of permits and licenses issued by all DNR agencies. This will further enhance DNR law enforcement on the lake. Rather than each division separately imposing sanctions for violations, all permits and licenses issued by DNR agencies may be subject to suspension, termination or other action.

### **11.1 Allow grazing on sovereign lands to the extent that it is consistent with public trust responsibilities.**

The majority of sovereign land grazing potential on the lake is on lands within the 39 townships specified in Section 23-21-5. Several existing permits allow cancellation, after notice, if DWR decides grazing impacts are causing unacceptable adverse effects on nesting habitat or other wildlife values. Existing

permits contain a provision allowing for cancellation if the land is committed to a higher and better use. Since DWR is better prepared to determine impacts to wildlife values and has a greater on-the-ground presence than DFFSL, it makes sense to transfer administration of grazing permits on 23-21-5 lands to DWR.

### **12.1 Designate roads, causeways and utility corridors.**

Use of existing corridors for transportation and utilities will minimize impacts because there will be no new ground disturbance. The two railroad causeways provide east-west corridors and are important transportation links. A utility, railroad and highway "corridor" already exists east of the lake. The Davis County Causeway provides access to AISP. DNR does not support the AISP southern causeway as a public transportation corridor because the approach to the causeway traverses private property and important south shore wildlife habitat. As discussed in the AISP Resource Management Plan public transportation over the causeway would result in access management problems for the park. DNR will maintain a right of administrative and emergency access over the causeway.

### **13.1 Identify the meander line on the ground for law enforcement purposes.**

This reflects the current law enforcement approach, with addition of linking DNR-issued permits and using orthophoto mapping technology to identify the meander line. Orthophoto maps will be a useful guide to the general location of meander for law enforcement purposes, but it is likely

that actual surveys will be needed on a case-by-case basis when serious disputes arise regarding meander location.

#### **14.1 Improve search and rescue access and operations.**

All search and rescue efforts are the responsibility of county sheriffs' offices. Due to the location of AIM and GSLM facilities and the availability of DPR resources, the majority of search and rescue efforts will involve DPR. The five counties around the lake have an Operational Preplan for GSL rescues. It is an inter-local agreement that coordinates resources and representatives directed by a council. One council recommendation is to acquire better vessels for rescue purposes. Utility of the boat ramp at the Little Valley harbor is limited by water depth. Improvements would include dredging near the ramp area.

#### **15.1 GSL and its surrounding wetlands have been nominated for a Ramsar designation.**

DNR encourages interested persons to assist in investigating resource management implications of Ramsar designation. Preliminary indications are that existing Ramsar designations in the U.S. are typically sites that focus on wildlife and habitat protection where Ramsar designation nicely complements the dedicated use of resources. The extent to which a variety of uses under

the Public Trust Doctrine and the legislature's multiple-use mandate can be accommodated under Ramsar designation is not certain. The reasoning some advocates offer that Ramsar heightens appreciation for wetland values and provides protection but does not effect management requires more investigation. Ramsar designation appears to have been used to stop some developments. The requirement to report to an international organization on management actions if GSL were to become a Ramsar site is somewhat an affront to state sovereignty. The selected alternative does not preclude designation; it ensures full assessment of management implications.

#### **16.1 Protect open space and critical lands near the lake.**

DNR supports preserving open space and critical lands and will look at acquiring property or conservation easements on a case-by-case basis consistent with DNR policy.

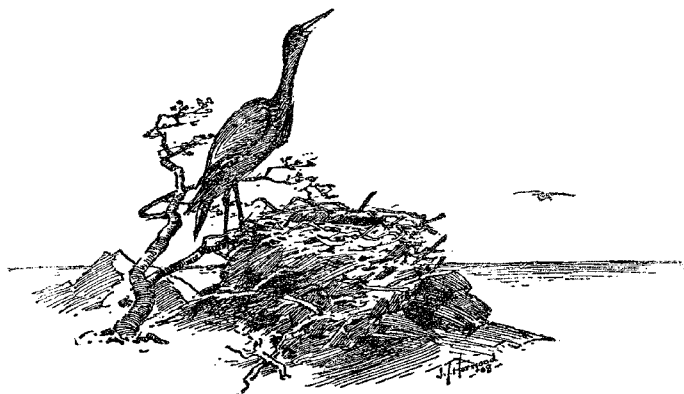
#### **16.2 Protect the viewshed or the visual aesthetics of GSL.**

Lake users value the viewshed and aesthetics of GSL. DNR will develop a VRM plan. This could include removal of existing visual barriers and placing restrictions on future barriers. It could also address viewshed mitigation strategies as part of the permit approval process.

**Notes:**



# Great Salt Lake Planning Process



# Great Salt Lake Planning Process

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## Overview

DNR has management programs in place for the resources of GSL. Those programs are designed to both conserve the lake's resources, and to make those resources available for beneficial uses. DNR's management of AISP and Farmington Bay WMA, the regulation of commercial brine shrimping and sport hunting and the MLP are examples of resource management programs currently in operation.

At the same time, factors exist which are affecting or have the potential to affect the lake, its resources and beneficial uses. Purposes of this planning process are to ensure that existing programs contribute optimally to DNR's management objectives for the lake and that emerging issues and demands are addressed in a coherent and comprehensive manner, consistent with overall management objectives.

## The Planning Process

In August 1997, the DNR assembled the GSL Planning Team (Planning Team) of representatives from each of the divisions of DNR, with the charge to develop a resource management plan for DNR and all its divisions. The planning process utilized by the team is based on the land management planning process set forth in Section 65A-2-4 of the Utah Code, and in implementing rules found at R652-90 adopted by DFFSL, specifically the processes for CMPs. Because of the scale of GSL as a planning unit, and because of the complexity and significance of the lake and its resources,

the Planning Team has implemented steps and public processes in addition to those required in rule.

Public involvement in the planning process was officially initiated on February 3, 1998 with a notification of State Action to RDCC. Locally published public notices invited participation in several scoping meetings conducted in each of the five counties in which GSL is located. However, starting in November, the Planning Team also conducted informal internal and external scoping and issues identification, and attended a number of association, club and individual agency meetings to discuss the plan and the planning process.

## Statement of Current Conditions and Trends

The starting point for development of a comprehensive and consistent management plan is the assembly of relevant information and analyses into a resource inventory. Through a one-year internal and external scoping project, the Planning Team identified the resource inventory information it believes is relevant to the good management of GSL. This inventory was assembled and evaluated to develop descriptions of the current conditions of the lake's resources, and to discern trends which should be taken into account in future management. Because the information available on GSL and its resources is encyclopedic in scope and volume, the team digested and presented it in the context of the key issues and needs. The *Statement of Current Conditions and*

*Trends* (SCCT) represents a baseline picture of GSL and its resources.

Five hundred copies of the SCCT were available for GSLTT and public review. Comments generated from this review improved the SCCT section of the *Draft Comprehensive Management Plan* (Draft CMP) and formed the baseline to develop of an array of management alternatives for the Draft CMP. The revised SCCT section will be included in the Great Salt Lake Resource Document (GSLRD).

## **Great Salt Lake Management Alternatives**

The array of GSL management alternatives was prepared by the Planning Team for a second series of public meetings to invite public review and comment. Five public meetings were held in five counties between January and February 1999. Comments and responses on alternatives were included in the Draft CMP.

The purpose of the GSL Management Alternatives Analysis was to provide a framework for a general comparison of management alternatives. The analysis considered four general criteria to evaluate the proposed management alternatives:

- Feasibility/Effectiveness
- Possible Impacts
- Conflicts/Coordination
- Public Trust Protection
- 

Feasibility included consideration of the time, money and other resources required. Effectiveness indicated how successful the proposed alternative

would be a general context. Possible impacts were considered in this analysis and included ecosystem, ecology, industry and other impacts. Conflict and coordination examined user group, agency and other conflicts, and required coordination. Public trust is a broad criterion which examined potential impacts on public trust values.

## **Economic Analysis**

The Office of Energy and Resource Planning (OERP) evaluated the economic impacts of three management recommendations contained in the *Draft GSL CMP: Planning Document* which was the internal review version of the Draft CMP. OERP investigated the economics involved in three planning issues:

- Strategies to deal with a fluctuating lake level
- Policy of WDPP operation
- Salinity management

Numerous tables and charts were compiled. The economic analysis produced interesting and helpful results in regard to these issues and the selected alternative.

## **Scientific Review Committee**

DNR selected a Scientific Review Committee (SRC) to “verify and validate the scientific information presented in the *Draft GSL CMP: Planning Document*. DNR requested that the reviewers focus on an evaluation of the scientific underpinnings presented in the SCCT section of the planning document. The purpose of the review process was to

offer an unbiased assessment of the technical information base utilized by DNR to make decisions and tradeoffs related to management of GSL. The review process evaluated available technical information, identified information that was limited or missing, and critiqued the information base to enhance the credibility of the planning process. SRC was asked to ignore political and economic issues of GSL and focus only on the science.

The SRC held several meetings with the U.S. Geological Survey and DNR staff concerning water-salt balance modeling and also interviewed several government and industry scientists. The SRC produced three documents, a letter to Kathleen Clarke, DNR Director; *Evaluation of the Scientific Underpinnings* of the May 1, 1999 *GSL CMP: Planning Document* and appendices with several sections of supporting information. The SRC also met with Kathleen Clarke and the Planning Team to present their findings in August 1999.

The Planning Team responded to the SRC recommendations by analyzing, making additions, edits and other adjustments to the Draft CMP. SRC recommendations resulted in additional review, study and the development of two new appendices H and I to provide more detailed information in the Draft CMP.

## **Salinity Engineering Study**

In November, 1999, DNR funded an engineering study to investigate measures to reduce the salinity differential between the north and south arms of GSL. DNR requested that the contractor:

1. Investigate strategies to improve bi-directional flow through the railroad causeway between Promontory Point and Lakeside to reach specified target conditions to reduce the salinity differential between the north and south arms of GSL;
2. Coordinate with DFFSL and other supporting agencies to verify the science, and to pre-design geotechnically viable engineering options; and
3. Determine estimated costs associated with the options.

The contractor reviewed studies, reports, water-salt balance model output, and specified conditions to be modeled. Alternative measures were screened and evaluated for effectiveness, cost, ability to construct, impact to the railroad and operation and maintenance.

## **Public Involvement Overview**

### **Stakeholder Meetings**

Stakeholder meetings have been a valuable part of this process and were initiated before the GSL Planning Project was announced. Meetings were held with federal agencies, local governmental officials, citizens, industry groups and interested individuals. Through stakeholder meetings, correspondence, and other conversations, 550 people interacted with the members of the Planning Team from November 1997 to April 1998.

Several stakeholder meetings were held with these groups in January and February 1999. Approximately 60 people attended these meetings during the

presentations and reviewed proposed GSL management alternatives.

The time period between February 1999 and the release of the Draft CMP also provided another opportunity to meet with stakeholders and discuss baseline information, alternatives and the Planning Team's next steps.

### **Public Meetings**

Two sets of public meetings were held in Weber, Box Elder, Davis, Salt Lake and Tooele counties. The first set of public meetings included a presentation about the purposes of the planning effort and an invitation to participate in the process. Approximately 80 people attended the meetings held between February and March of 1998. The second set invited public review and comment on the proposed array of GSL management alternatives. Approximately 100 people attended.

After meeting with the public, interested stakeholders, and GSLTT on the GSL management alternatives, the Planning Team completed a comment analysis. Comments and responses were presented in the draft CMP.

### **Great Salt Lake Technical Team Involvement**

GSLTT participated in the review of the SCCT document. On November 5, 1997 a GSLTT meeting was held as an introduction to the planning process. On February 23, 1999 the GSLTT

considered the Planning Team's proposed management alternatives and discussed the issues in an informal group setting. Approximately 43 members of this advisory group attended the meeting.

### **Legislative and County Official Participation**

On February 23, 1999 the Planning Team set up displays and distributed information in the Capitol Rotunda. Legislators and state employees had an opportunity to exchange information with the Planning Team. In other settings, DNR administration and Planning Team members visited with county officials and state legislators.

Three additional opportunities for lake issue orientation were made available to governmental officials and state legislators.

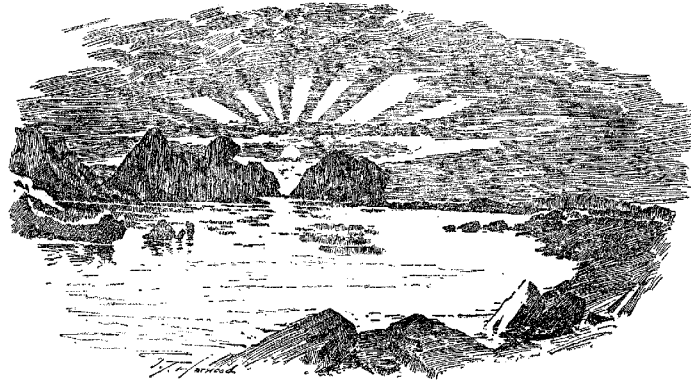
### **Great Salt Lake Planning Team Presentations and Special Meetings**

Members of the Planning Team made over 150 appearances and presentations to different governmental entities, agencies, special interest groups, organizations and industry.

### **Media Involvement**

Press releases, radio announcements and other newspaper articles highlighting GSL and the planning process have been numerous and ongoing throughout the planning process.

# Decision and Implementation Structure



## Decision and Implementation Structure

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### **Decision Process for Proposals on GSL**

DFFSL will be the keeper of the CMP and will be the formal point of contact for proposals on sovereign land. Before making formal contact with DFFSL, proponents are encouraged to contact other divisions and agencies regarding how the proposal may affect them.

A "new" proposal is a proposed land use that is either new for GSL or of such size that, in DFFSL's judgement, there is potential for significant adverse effects. DFFSL will determine if a proposal is a new proposal for which a presentation to the GSL Board of Directors (BOD) is required. The BOD includes DNR's division directors and executive management. For land uses that are not new proposals, DFFSL will accept an application or refer the proponent to the appropriate DNR division for routine application processing.

The BOD will convene and hear presentations on new proposals by proponents. Since detail of a proposal may not be available, and a proposal may not have undergone environmental review at the time a presentation is made, the BOD will only approve or reject the proposal in concept. If a proposal is approved in concept, the proponent will be referred to the appropriate division which will process an application through standard procedures. If a proposal is rejected in concept, it is not necessarily the end of the line for a proposal. A proponent may still file an application and await final action by a division. In either case, the

final action by a division is subject to appeal through administrative processes.

### **The Great Salt Lake Technical Team (GSLTT)**

Section 65A-10-8-(11) provides that the division shall:

"Retain and encourage the continued activity of the Great Salt Lake Technical Team."

GSLTT members, because of their knowledge of the lake and their agencies' responsibilities, provide valuable technical information for decision making. This group is a forum for the interchange of information on monitoring, research, ideas and programs that affect the activities and natural systems of GSL. Agencies involved in the lake's management will be asked to provide representation to the GSLTT. Each of the five counties involved with the lake also will be asked to provide a representative. Other interests and groups may be invited to participate on the GSLTT.

The activities and reports of GSLTT will be presented to the BOD after review and analysis by staff from DFFSL. The GSLTT will be self governing with staff support from the DNR as requested and will be asked to convene for conduct of business at least two times per year.

Persons or groups interested in being associated with the activities of the GSLTT should submit a written request to DFFSL's director requesting

notification of meetings and work groups.

### **Appeal Process**

In accordance with Utah Code Ann. Section 65A-1-4, "Division of Forestry, Fire and State Lands -- Creation -- Power and authority," an aggrieved party to a final action by the director of DFFSL may appeal that action to the executive director of DNR within 20 days after the action. The executive director shall rule on the DFFSL director's action within 20 days after receipt of the appeal. The specific procedure through which any party aggrieved by a DFFSL action may appeal is outlined in Utah Admin. R. 652.

### **Comprehensive Management Plan**

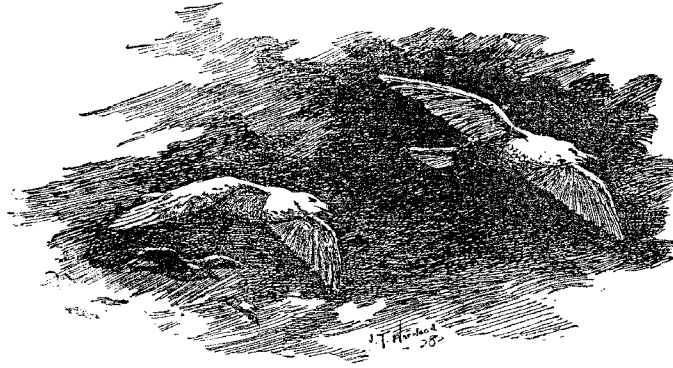
It is anticipated that the GSL CMP will have a life span of a minimum of ten years. The plan is subject to review and revision as the need arises.

DFFSL will be the administrator of the plan process. This division will be responsible for implementing the recommendations of the plan. It will also be the central point of contact for anyone wishing to receive information on the plan or to inquire on an aspect of the plan. The division's office will act as the repository of information for all information pertaining to the development and completion of the plan.

DFFSL will work with DNR and other agencies to allocate and protect GSL public trust resources. Routine allocation issues such as leasing and permitting for land use will be handled by DFFSL. Other issues will be referred by DFFSL to divisions and state agencies as needed.



# Implementation



## Implementation

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### Goals and Objectives

#### Introduction

The Planning Team considered possible implementation goals and objectives throughout the planning process.

GSL is a public trust resource for the benefit of the people. The people have the right to use and enjoy trust lands, waters and resources for a wide variety of purposes. Public use and enjoyment of GSL in its dynamic forms will be free of substantial impairment.

#### Goals

Protect and sustain the trust resources of, and provide for reasonable beneficial uses of GSL resources, consistent with their long-term protection and conservation. Sustain the health of this unique and productive saline environment for its inherent values. Wisely manage use for present and future generations through stewardship, public involvement and education.

#### Objectives

- Ensure consistency in internal (DNR) and external coordination and collaborative decision making.
- Provide opportunities for public contact and involvement.
- Provide public access to monitoring data, new proposals and management activities on the GSL website.
- Develop benchmarks to measure progress in implementing the CMP.

- Improve coordination with state, local and federal entities on jurisdictional activities related to GSL.
- Promote collaborative sovereign land management.
- Coordinate monitoring and research activity, interpret this data and use to establish ecological targets to ensure sustainability. This information will help measure progress and provide guidelines for all management activities.
- Develop strategies to protect open space, historical, scientific and viewshed values, and for land acquisition and easements with a focus on priority and critical habitats.
- Increase public education and appreciation of GSL resources through interpretation.
- Allow multiple-uses to the extent they are consistent with the Public Trust Doctrine.

Implementation activities is an important part of GSL planning and issue resolution. The following activities reflect the management direction for the lake and its resources. Implementation may require coordination with stakeholders. This will be achieved through the RDCC process.

This schedule specifies the actions to be taken to implement this CMP, lead agency responsibility for the action, and the time frame within which the action

will be taken. This schedule is organized  
by planning issue (resource concern) as

presented in the plan.

Planning Issue	Implementation Action/Product	Responsible Party (Lead Agency)	Target Date
1.1 flood plain	define flood plain in GSL Plan	DNR	plan approval
1.2 lake level strategies	specify actions to be taken	DNR, other entities may do same	12/31/00
1.3 WDPP policy	specify policy	DNR	plan approval
1.4 Locomotive Springs flows	investigate causes and mitigate impacts	1. DWRi 2. DWR	ongoing (1)
1.5 water right acquisition	case-by-case acquisition	DWR	continuous (2)
1.6 embayment policy	specify policy	DNR	plan approval
2.1 salinity	1. clean/modify causeway openings 2. monitor salinity 3. determine need for further action	1. DFFSL 2. UGS 3. DFFSL	1. ongoing 2. ongoing 3. continuous
2.2 salt accounting	develop, implement methodology	DFFSL	2/28/01
3.1 water quality	1. Coordinate with DWQ 2. pursue grants (3)	DNR	1. continuous 2. continuous
3.2 wetland policy	policy statement	DNR	12/31/00
4.1 air quality	1. negotiate MOU with DEQ	DNR	12/31/00
5.1 23-21-5 lands	proposal to designate WMA lands	DWR	3/31/01
6.1 sovereign land classifications	change designations	DFFSL	plan approval
6.2 geologic hazards	identify and analyze on case-by-case basis	DFFSL	plan approval
6.3 BRMBR expansion	negotiate land use authorization	DFFSL	after ownership below meander is determined
6.4 diking policy	require assessments	DFFSL, DWR (4)	plan implementation
7.1 ML zones	implement MLP	DFFSL	ongoing

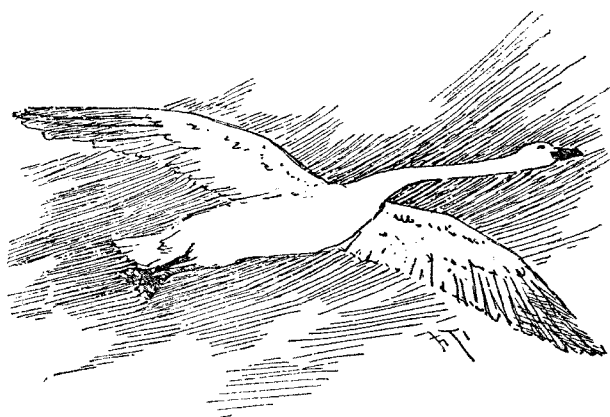
Planning Issue	Implementation Action/Product	Responsible Party (Lead Agency)	Target Date
7.2 ML policies	implement MLP	DFFSL	ongoing
8.1 boat harbors	make Black Rock harbor available	DFFSL	one year after request
8.2 navigation	consider navigation when causeway modifications are evaluated	DFFSL	ongoing
9.1 OHV	1. open T11N, R11E 2. address OHV use in WMA plans 3. enforcement	1. DFFSL 2. DWR 3. DPR	1. plan completion 2. routine WMA plan cycle 3. continuous
9.2 access	improve access as opportunities allow	DNR	continuous
9.3 interpretation/ education	improve as opportunities allow	DWR, DFFSL, DPR (5)	continuous
9.4 hunting conflicts	waterfowl proclamation	DWR	ongoing
10.1 sovereign land classifications	change as needed	DFFSL	continuous
10.2 boat harbors	make sovereign land available	DFFSL	ongoing
10.3 trespass	determine linkage among permits	DNR	10/31/00
11.1 grazing administration	transfer to DWR on WMA lands	DFFSL	12/31/00
12.1 transportation	designate corridors	DFFSL	plan completion
13.1 law enforcement	identify meander on orthophoto maps	DFFSL	12/31/00 (6)
14.1 search and rescue	improve Little Valley harbor launch ramp	DFFSL	2/28/01
15.1 Ramsar	1. apprise Governor's Office 2. monitor	DNR	1. plan completion 2. continuous
16.1 open space	1. identify critical land priorities 2. fee title and conservation easement acquisition	DNR	ongoing

<b>Planning Issue</b>	<b>Implementation Action/Product</b>	<b>Responsible Party (Lead Agency)</b>	<b>Target Date</b>
16.2 visual resource management	VRM Plan	DNR	12/31/01

Notes.

- (1) "Ongoing" means the action occurs presently and continues indefinitely as opportunities or routine scheduling allow.
- (2) "Continuous" means the action begins with plan approval and continues indefinitely as opportunities or routine scheduling allow.
- (3) Grants primarily oriented toward determining the effects of potential contaminants in hypersaline environment.
- (4) DWR on WMA lands designated pursuant to planning issue 5.1, DFFSL on other lands.
- (5) On lands administered by the respective agencies.
- (6) December 2000 for existing orthophoto maps, continuous as new maps become available.

# Monitoring and Research



## Monitoring and Research

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A substantial part of CMP implementation directly involves monitoring, primarily for determining the efficacy of implementation actions and/or assessing the need for further action.

Environmental monitoring and research is the key to developing sustainable resource allocation and in implementing effective management strategies. It is challenging to manage GSL for multiple-use and sustainability without a well-developed, accurate, reliable and focused database. Decision-making is currently based on the best available information. Without existing data and monitoring resource allocation and decision-making would be haphazard.

Little information is currently available or evaluation of ecosystem function and health. A well-designed monitoring and research program would be of great value in assessing trends, understanding GSL's natural range of variability, and behavior of ecosystems.

It is impossible to bridge all gaps in information and understanding due to the dynamic nature of the lake and its environs, the various time scales involved in ecosystem function and degradation and limited funding available for research and monitoring. It is more important to focus on the quality of data rather than the quantity.

DNR will coordinate with other agencies and stakeholders to develop a list of gaps in information and compile a list of GSL research topics for state universities to consider for graduate and doctorate studies. Improved research and

monitoring coordination will help managers focus research on critical needs and build a GSL information database. DNR will seek funding partnerships with the U.S. Environmental Protection Agency (EPA), other agencies and stakeholders.

The overall goal for research and monitoring is to compile data sufficient for development of specific ecological, hydrological, and public trust objectives in support of the CMP.

There are two goals for the specific monitoring or research activities:

1) compile data sufficient for identification of scientifically-based ecological conditions necessary for long-term sustainability, and 2) determine the interrelationships between habitat conditions and wildlife productivity sufficient for development of quantifiable maintenance or restoration activities.

As monitoring and research activities continue and expand, it is recommended that a monitoring and research subcommittee of the GSLTT be convened on a regular basis. This subcommittee could be charged with the coordination and oversight of data gathering activities on the lake. In addition, they would ensure that the collected data is shared with, and/or analyzed by, all research and monitoring participants. Once the non-proprietary data has been verified and analyzed, it should be made available to the public. Following are descriptions and costs of Current Monitoring and Research, Phase I top priority, and Phase II proposed monitoring.

## **Current Monitoring and Research Activities**

This section lists the monitoring and research activities which are currently underway on GSL. Each item gives a brief summary of the activity.

### **Agriculture**

#### ***Grazing Impacts***

Monitoring is conducted through observations of nesting habitat in grazing areas made by DWR personnel incidental to other duties. No official grazing transects have been established. The Nature Conservancy (TNC) informally monitors grazing impacts on sovereign lands under permit to them and on TNC's private land. DWR's monitoring is conducted in the normal course of business, without readily identifiable costs.

### **Biology**

#### ***Brine Shrimp Monitoring***

The DWR's Great Salt Ecosystem Project (GSLEP) administers a brine shrimp monitoring program in GSL. Two different groups collect, enumerate and analyze the data. GSLEP personnel do a portion of the work and have contracted USGS to do the other portion; that agency also contributes matching funds. Some of the enumeration and interpretation of the data is done jointly. Sampling is done by personnel using boats on the lake; enumeration is done in the laboratories and data analyses is completed at the respective offices. All of this effort yields information on the shrimp population that guides management decisions such as how much brine shrimp egg can be harvested.

#### ***Brine Shrimp Harvest Monitoring***

The commercial brine shrimp harvest is monitored by GSLEP staff to quantify the amount of eggs taken from the lake, where they were harvested, and the condition of the eggs. This information is used to manage the brine shrimp population and the fishery itself.

#### ***Brine Shrimp Egg Survival Monitoring***

Studies are being done to determine what portion of the shrimp eggs in the lake survive the winter and are able to hatch in the spring. This information is critical in determining how much brine shrimp egg can be harvested. Naturally occurring eggs, and eggs in special research vessels, are collected from the lake over the course of the winter and analyzed. Utah State University (USU) is contracted by DWR to conduct a portion of this research.

#### ***GSL Algae Study***

USU is contracted by DWR to conduct a phytoplankton study of GSL algae.

#### ***Brine Shrimp Population Model***

USU is contracted by DWR to develop a mathematical model to predict brine shrimp population dynamics performance in GSL. This model will be used along with monitoring data to predict how the shrimp population is doing and how much can be harvested.

#### ***Remote Monitoring Feasibility Study***

USU is contracted by DWR to conduct a feasibility study to determine if it is technologically possible to accurately quantify the amount of brine shrimp eggs in the lake using remote sensing techniques. The results of this study may have application in the collection of data on wetlands and algae production.



### ***Eared Grebe Population Monitoring***

The GSLEP conducts annual bird surveys to monitor Eared grebes at GSL. These birds rely on brine shrimp for food; proper management of the shrimp population must reserve enough shrimp for their survival. Understanding bird population dynamics will allow DWR to make good management decisions.

### ***GSL Waterbird Counts***

The GSLEP conducts, coordinates, and manages a lake-wide waterbird count. This count has been conducted over the past three years and will continue for at least two more. To date, it is the most comprehensive waterbird count undertaken around the lake. Knowing what species populate the area; when, where, in what numbers, and their relation to habitats is essential to successfully conserve these bird resources. As many as 90 volunteers participate in this effort. Personnel costs would be prohibitive if these dedicated people were compensated for their efforts.

### ***Eared Grebe Energetics Research***

USU is contracted by DWR to conduct field work and laboratory analysis of Eared grebes from GSL. The purpose of this monitoring is to determine how many brine shrimp each grebe needs daily to sustain itself. The information will be used along with the grebe monitoring data to determine how many brine shrimp cysts are needed to feed the birds.

### ***Waterfowl Census of GSL***

Waterfowl (including swans) are counted at regular intervals during the year to determine their population numbers and use areas around the lake. This information is used nationally to manage these migrating birds.

### ***Waterfowl Management Areas***

DWR owns and manages eight WMAs on and around GSL to conserve marsh habitats and the birds that utilize them. These areas are literally an oasis to the millions of birds that use them.

### ***Bird Banding***

Birds are banded annually by DWR to collect data on survival rates and migration patterns. This information is critical to managing GSL bird resources.

## **Chemistry**

### ***Salinity Sampling***

UGS and DWQ, with assistance from DPR, conducts biannual brine sampling at four sites on the lake to determine chemical composition. DEQ also collects samples at the same sites, but analyzes them for a more extensive set of parameters. The data gathered is combined with hydrologic data collected at the gages to compute water budgets and chemical mass balances.

### ***Mineral Production***

DFFSL monitors the production of minerals from the lake in conjunction with the collection of royalty payments from producers. Monitoring is conducted in the normal course of business, without readily identifiable costs.

## **Commercial and Industrial Access Conflicts**

Monitoring for this activity is conducted primarily in response to complaints received by the DNR. Since there is no division specifically assigned monitoring responsibilities, the response usually involves a determination of facts, assignment of primary responsibility to deal with the issue, an attempt at an amicable resolution, followed by administrative or legal action, if

necessary. In this context, monitoring is conducted in the normal course of business, without readily identifiable costs.

## **Hydrology**

### ***Stream Gaging***

Currently, there are five sites upstream of the lake where inflows are measured, and one within the lake where intra-lake flows are measured. The first four sites measure the vast majority surface flows into the lake and are used to develop water budgets and compute mass balances for various chemical constituents in the water column. These sites are crucial for understanding lake hydrology. The Locomotive Springs site is maintained by DWR for purposes of managing the WMA. It may be possible to correlate the collected data with regional climatic data to estimate springflow and diffuse seepage to the lake. The last site measures the flow through the breach in the railroad causeway and is used to compute water budgets and salt balances for the two

arms of the lake. The following gages are those currently in use: Bear River near Corinne, Weber River near Plain City, Jordan River at Salt Lake City, Surplus Canal at Salt Lake City, Locomotive Springs WMA, and the Union Pacific Railroad northern causeway breach and culverts.

### ***Lake Level***

Currently, two gaging sites on the lake maintained by USGS and DFFSL measure water surface elevations. This data, combined with the lake's elevation-volume tables, is used to compute water budgets and chemical mass balances. The gages currently used are: Great Salt Lake at Boat Harbor and Great Salt Lake at Saline.

### ***Weather Monitoring***

The GSLEP is a partner with the University of Utah (Uof U) Meteorology Department in collecting weather and water data on GSL. The Wood's Hole Oceanographic Institute is one of the many other partners involved in this effort. This data is used to understand how lake algae grow and is related to shrimp population performance.

Current DNR Costs			
Plan Section	Activity	Cost	Type
Agriculture	Grazing Impacts	NA <sup>1</sup>	Ann <sup>2</sup>
Biology	Brine Shrimp Population Monitoring	\$137,425	Ann
	Brine Shrimp Harvest Monitoring	\$31,000	Ann
	Brine Shrimp Egg Survival Monitoring	\$31,220	Ann
	GSL Algae Study	\$3,000	Ann
	Brine Shrimp Population Model	\$43,031	Proj <sup>3</sup>
	Remote Monitoring Feasibility Study	\$59,340	Proj
	Eared Grebe Population Monitoring	\$10,000	Ann
	GSL Waterbird Counts	\$85,000	Ann
	Eared Grebe Energetics Research	\$38,450	Ann
	Waterfowl Census	\$54,000	Ann
	Waterfowl Management Areas	\$790,000	Ann
	Bird Banding	\$14,000	Ann
Chemistry	Salinity Sampling	\$10,197	Ann
	Mineral Production	NA	Ann
Comm/Industrial	Access Conflicts	NA	Ann
Hydrology	Stream Gaging	\$28,610	Ann
	Lake Level	\$10,880	Ann
	Weather Monitoring	\$3,500	Ann
<b>Total</b>		<b>\$1,349,653</b>	

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<sup>1</sup> Activity occurs in the normal course of business and has no readily identifiable costs.

<sup>2</sup> Annual agency cost of on-going activity.

<sup>3</sup> Agency share of total project cost.

## **Phase I Monitoring And Research Activities**

Items in this section represent those activities which the Planning Team believes to be of highest priority for accomplishing the goals and objectives of the GSL CMP. Funds available to DNR divisions will effect the completion of these tasks.

### **Biology**

#### ***Nutrient & Heavy Metal Inflow Monitoring***

No data exists on the volumes and concentrations of waterborne nutrients and heavy metals entering GSL after it flows through the adjacent marshes. This data is essential to understanding how algae and other species are effected by these inflows to the lake. Algae feed brine shrimp and brine flies. The huge bird populations around the lake depend upon algae, shrimp and flies for food. The commercial harvesters depend upon the shrimp. This data does not exist and is the most critical information for lake managers at this time.

### **Chemistry**

#### ***Salinity Sampling***

Currently, UGS samples lake salinity twice a year at four sites; this corresponds to the lake's annual high- and low-stands. These lake-stands usually occur in the spring and fall. Collection of additional data during the summer and winter would afford a more complete look at salt loading and lake salinity dynamics throughout the year.

It is also advisable to take similar concentration measurements at the Newfoundland Weir, where brines return to the lake from the Newfoundland Pond,

in order to have a complete record of brine movements.

### **Hydrology**

#### ***Weir Flow Measurements***

Water returns to the lake from the Newfoundland Pond via a weir located near Strong's Knob. Regular flow measurements need to taken at this weir.

#### ***Breach and Culvert Flow Measurements***

The selected alternative for solving the salinity imbalance in GSL is to increase the exchange of brines between the north and south arms of the lake. This will be accomplished by deepening the existing breach at Lakeside and cleaning debris out of the existing culverts and ensuring they remain open and flowing at capacity.

Once the deepening of the breach is accomplished, a monitoring program will be initiated to ensure that the sill remains at the desired elevation. If siltation starts to effect water carrying capacity of the breach, newly deposited sediments will need to be removed.

At the current (February, 2000) lake elevation of 4203, the culverts are under water. When debris is cleaned out of the culverts, it is difficult to determine if, in fact, they are clean and transporting all the flow possible. Flow measurements must be made at the culverts and the breach to ensure that the water exchange is occurring to meet designed capabilities. Maximum flows will ensure that the highest return is being exacted for the dollars invested in the project.

USGS measures flows at the culverts and breach four times a year. To obtain a more complete record of lake flows, the frequency of these

measurements needs to be increased to eight times a year.

## **Land**

### ***Boundary Identification Survey***

The degree of public access to north arm boat launch facilities is uncertain. There is an old, but usable, harbor at Little

Valley on the west side of Promontory Point. Since a portion, or all of the harbor is on sovereign lands, a land survey needs to be conducted along the meander for roughly three miles near this harbor. Boundary identification will allow this public access issue to be resolved.

Projected DNR Costs			
Plan Section	Activity	Cost	Type
Biology	Nutrient & Heavy Metal Inflow	\$50,000	Ann
Chemistry	Salinity Sampling	\$10,197	Ann
Hydrology	Weir Flow Measurements	\$8,000	Ann
	Breach & Culvert Flow Measurements	\$21,000	Ann
Land	Boundary Identification Survey	\$20,000	Proj
<b>Total</b>		<b>\$109,197</b>	

## **Phase II Monitoring and Research Activities**

Items in this section represent those activities which the Planning Team believes to be of secondary priority for accomplishing the goals and objectives of the GSL CMP. These activities will be initiated on an as-needed and funds-available basis.

### **Agriculture**

#### ***Grazing Impacts***

Grazing transects need to be established and monitored.

### **Biology**

#### ***Habitat Encroachment***

Due to population growth, it is necessary to monitor the extent to which non-wildlife activities are encroaching on habitat, and devise ways to mitigate the impacts on a case-by-case basis. Remote

sensing technology can be used to collect this data.

### **Chemistry**

#### ***Mineral Production***

Data needs to be collected on both mineral production and the amount of sequestered, stockpiled, and waste minerals from the lake's environment.

### **Commercial/Industrial**

#### ***Access Conflicts***

Access conflicts need to be resolved and monitored among commercial interests.

#### ***OHV Impacts***

An OHV Management Plan has been adopted by Box Elder County, SITLA and BLM. The area of sovereign land open to OHV use under the selected alternative was identified in the aforementioned plan. That process identified the need for DPR to secure

funding for a position to help enforce restrictions on OHV use. DPR's effort to secure the funding has not yet been successful. In the interim, monitoring should continue on an incidental basis by the Box Elder County Sheriff's Office and DWR personnel.

There is an opportunity to coordinate enforcement where unauthorized OHV activity occurs along the south shore in the vicinity of Saltair, the Inland Sea Shorebird Reserve and the Gillmor Sanctuary. A partnership could be created to hire someone to patrol this area. The area covered by the partnership could extend westward to monitor public trespass on private land on Stansbury Island.

## **Hydrology**

### ***Satellite Imagery***

In partnership with the U of U's Center for Remote Sensing and Cartography, satellite imagery would be acquired on an annual basis to monitor urban encroachment on sovereign lands and wetland habitat around GSL and WMAs, determine lands which are flooded and/or exposed at various lake-stands, and give an accurate measure of the lake surface area for evaporation calculation.

## **Law Enforcement**

### ***Boundary Enforcement***

A land survey should be undertaken to mark and monument the boundary between sovereign lands and adjoining parcels where this boundary is uncertain. This effort should begin on the east side of the lake where adjacent land development pressures are greatest and proceed to the west side as rapidly as resources become available. This survey will be conducted over a number of years.

## **Recreation**

### ***Recreation Impacts***

Currently, AISP is under contract with USU for a social survey (\$8,200) and Colorado State University for a wildlife study (\$50,000 over three years). These are surveys that need to be addressed every five years. The National Park Service uses a Visitor Experience Resource Protection concept that GSL could implement to protect the visitor experience (\$50,000).

### ***Recreation Demands***

Future demands and trends need to be determined relating to access and visitor use on GSL. This would be accomplished by surveys, visitation reports, sampling in areas of concern. This would be a \$15,000 project conducted every five years.

### ***User Conflicts***

AISP would track complaints and conflicts to determine what types of problems are occurring. Additional study would be needed to expand this tracking to the whole GSL planning area. (\$20,000)

### ***Trends/Response***

To determine the social carrying capacity of recreational facilities, AISP would track visitation and types of use. A more in depth study would assess GSL trends. State Comprehensive Outdoor Recreation Plan addresses state-wide issues and could address specific GSL needs. (\$50,000)

## **Search & Rescue**

### ***Action Plans***

There is a five county search and rescue action plan in place. The county planning committees recognize a need for an amphibious boat to address a major airliner disaster in shallow water on GSL. The U.S. Air Force should be a party to any planning effort on this subject.

Projected DNR Costs			
Plan Section	Activity	Cost	Type
Agriculture	Grazing Impacts	\$5,000	Ann
Biology	Habitat Encroachment	\$27,000	Ann
Chemistry	Mineral Production	NA	Ann
Comm/Industrial	Access Conflicts	\$38,000	Ann
	OHV Impacts	\$8,000	Ann
Hydrology	Satellite Imagery	\$10,500	Ann
Law Enforcement	Boundary Enforcement	\$75,000	Ann
Recreation	Recreation Impacts	\$108,200	Proj
	Recreation Demands	\$3,000	Ann
	User Conflicts	\$20,000	Ann
	Trends/Response	\$50,000	Ann
Search & Rescue	Action Plans	\$60,000	Proj
<b>Total</b>		\$404,700	

Total Current and Projected Costs	
Current Activities	\$1,349,653
Phase I Activities	\$109,197
Phase II Activities	\$404,700
<b>Total</b>	\$1,863,550

## **Potential Partners for Monitoring and Research Activities**

Since planning efforts do not occur in a vacuum, the Planning Team has conducted extensive outreach activities to explain the GSL CMP and solicit comments from interested parties. In doing so, the Planning Team received information about other agencies and entities who could serve as potential partners in the various monitoring and research activities mentioned above. These entities could partner with DNR agencies and assist in management activities as sources of information, grants, and volunteers. Listed below are some of these entities.

### **Government Agencies**

State (Governor's Office of Planning and Budget, Department of Environmental Quality, Department of Transportation, Automated Geographic Reference Center)

City (Salt Lake City Department of Airports)

County (Box Elder, Davis, Salt Lake, Tooele, and Weber)

Federal Agencies (Fish & Wildlife Service, Natural Resource Conservation Service, USGS, BLM, USAF)

Multi-governmental (Wasatch Front Regional Council, Salt Lake County Visitors Bureau, Utah Reclamation & Mitigation Commission)

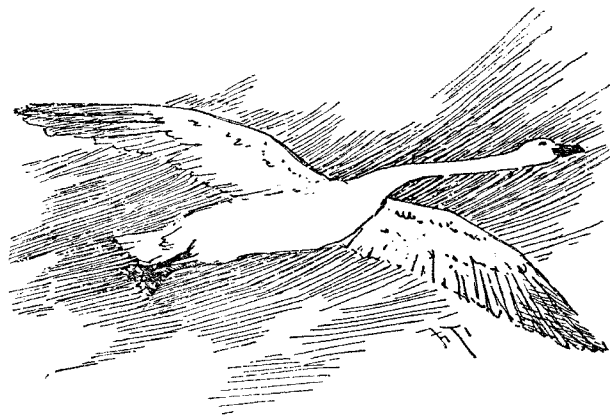
Non-governmental Organizations  
(Friends of GSL, Friends of Antelope Island, Gillmor Sanctuary, Inland Sea Shorebird Reserve, TNC, The Audubon Society)

### **Private Sector**

(Mineral Producers, Brine Shrimp Industry, UPRR, Utah Power)



# Appendices



# Appendix A

## Public Involvement



## Public Comments and Responses

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### Introduction

#### Public Comments on the Draft Comprehensive Management Plan

The comment period began on November 3, 1999 and ended on January 7, 2000. The Planning Team followed the same basic steps in tracking comments and generating responses as in the Draft CMP. All comments were considered in the decision process.

### Comment Analysis

#### Introduction

DNR received 70 comments on the Draft CMP. There was a significant amount of support for the preferred alternative on many issues. Salinity, brine shrimp harbors, public trust responsibilities and WDPP operation were issues most frequently addressed in comments. One respondent expressed support for the preferred alternative across the board as the best compromise for **all** competing interests. In regard to salinity many respondents stated the same reasons for support of the preferred alternative. Comment letters also typically expressed appreciation of the public involvement aspects of this planning process, irrespective of support for or opposition to the preferred alternative. Comments related to text corrections will be addressed when the Planning Team revises the SCCT.

Some comments only voiced support or opposition to the preferred alternative without stating a reason and do not

require a response. Comments to which the Planning Team responded are numbered and in italics below. Reasons supporting and opposing the preferred alternative are also listed. Comments with the same response are grouped together.

#### Issue 1.1 Flood plain

##### *Reasons supporting the preferred alternative.*

- 4217 is a useful designation.
- There is substantial infrastructure between the lake's current elevation and 4217. Development of new facilities below 4217 needs to be carefully considered.

*1. The language "encourage others to avoid development below 4217" is ambiguous. How will others be encouraged? This portends another rule that has no teeth in it, hence, cannot be counted upon to keep development out of the flood plain.*

*2. DNR should play a stronger role than to merely "encourage others . . ." to avoid building in the flood plain of GSL. The role DNR should take is determined by what is effective in fulfilling the public trust responsibility to ensure a sustainable GSL ecosystem in perpetuity.*

*3. DNR should take a more proactive role in developing inter-jurisdictional cooperation within the flood plain and with other issues within the watershed which affects sovereign land.*

As noted in the Draft CMP, development above the surveyed meander line is and will continue to be controlled through local planning and zoning irrespective of what DNR calls the flood plain. The general legislative policy to define the

flood plain and to implement the plan through local government must give way to the more specific planning and zoning authority of local government. DNR rejects the notion that regulation of building on non-trust lands in the flood plain is a public trust obligation.

*4. A widely recognized tool for a comprehensive management approach is flood plain management planning. A comprehensive watershed restoration and protection program should be developed for the greater GSL Ecosystem. The legislature directed DNR to work with local governments in a coordinated effort to manage the state's flood plains, shorelines and wetlands. The state regulatory agency cooperates with local entities to establish regulations and provides technical assistance.*

Some of the monitoring activities proposed in the plan are intended to lead to scientifically-based ecological objectives for GSL. Until the complex interrelationships of GSL systems are better understood, there is no reason to believe that grass-root and federal regulatory plans and processes are not adequate watershed protection measures. Such plans and processes include the Spanish Fork River Coordinated Resource Management Plan (CRMP), Clover Creek CRMP, a CRMP proposed for the Weber River Basin, the Tri-State Water Quality Commission, various river basin studies, ground water management plans, the Bear River Resource Conservation and Development, regulatory activity of Salt lake City within its watershed, and the Total Maximum Daily Load process.

*5. DNR should state clearly that GSL has the potential to go beyond 4217 and*

*even up to 4221 as indicated in the SRC report.*

This is mentioned on page 26 of the Draft CMP.

## **Issue 1.2 Fluctuating lake level strategies**

*Reasons opposing the preferred alternative.*

- The lake is too protean for pre-fabricated “zones” to adequately address each unique situation of a fluctuating lake and its ecosystems. DNR’s response needs to vary on a case-by-case basis.

- 1. If lake level zones are created, DNR should still have flexibility in responding to fluctuations on a case-by-case basis.*
- 2. How and where the zones would be designated and what process would be used to determine planning and management activities, who will determine what actions to be taken and how the public will be involved in the decision process should be addressed.*
- 3. Zones are acceptable as long as no one can infer from it that DNR or the state is able to control lake levels. We agree with the SRC in stating that “stakeholders should not expect the state to possess or develop a capability to control lake levels.”*
- 4. The alternatives ask if DNR should use zones to develop response strategies for lake level fluctuations without exploring what the alternative agency actions would be.*

There still seems to be some misunderstanding on the use of zones. The concept as discussed on pages 26-30 of the Draft CMP would be for each agency dealing with the lake to develop a management strategy for their activities on the lake. These strategies could then

be assembled by zone. Conflicting strategies could be resolved and an overall strategy for the given zone prepared. The concept would be flexible but would also give each agency information on the way other agencies would deal with various levels of the lake. Zones are a management tool.

The zones are presented in the Draft CMP. DNR agency actions for each zone will be identified and a draft will be submitted to RDCC.

*5. To develop flood response strategies at various lake levels we need to broaden into a flood plain management plan. Is DNR suggesting that using public trust responsibilities and the overarching goal of managing the ecological systems sustainability pulls together a suite of strategies that minimize costs of protecting infrastructure and addresses any future development in the flood plain? This overall direction would also initiate a wetland protection plan and creates a multi-jurisdiction approach to address planning and zoning issues at county and municipal levels. It also would provide for programs for developers such as tax incentives and transfers of development rights to focus development in areas outside of the flood plain.*

There is no need to engage in a flood plain management plan in order to satisfy the legislative policy to develop strategies to deal with fluctuating lake levels. DNR rejects the notion that the public trust responsibility imposes upon the state the obligation of developing a flood plain management plan. In absence of a specific or implied mandate to do so, in absence of substantial interference in public uses of sovereign land, and in absence of irreversible ecosystem

impacts, there is no obligation for a flood plain management plan.

### **Issue 1.3 WDPP**

#### ***Reasons supporting the preferred alternative***

- Pumping at 4205 is unacceptable to the USAF.

#### ***Reasons opposing preferred alternative.***

- I oppose pumping anytime. If people want to build on the flood plain I don't want my taxes used to bail them out when the lake rises.
- I am opposed to using stopgap measures to control mother nature. When mother nature says the lake should be high we should get out of its way.
- The plan does not provide sufficient information to say when WDPP should operate.
- The reasoning seems convoluted and duplicitous. The plan does not recommend pumping until substantial damage has occurred.
- The plan recommends using WDPP at 4208, but also states that pumping was started too late to have a significant impact on the maximum lake level in 1987. If we fail to learn from the mistakes of the past, the present CMP planning process is a wasted effort.
- The plan states that from an economic perspective, alternative C, pumping at 4205, appears to have greater benefits than alternative A, pumping at 4208. We see no strong argument in the Draft CMP to change the recommended pumping level to 4208.
- Pumping at elevation 4205 is not lake level management, but rather an emergency response to prevent flooding.

- Setting the trigger lake elevation at 4208 is fully unjustifiable considering the very high probability that the pumping will not be able to stay ahead of inflow and serious flooding will occur.
- Allowing natural lake level variation is the best way to sustain a functioning GSL ecosystem, especially its wildlife and habitat components.
- There were adverse effects of losing salt last time WDPP operated. The present configuration requires pumping from the north arm. Baseline studies have not been conducted. Many facilities are already protected by 1980s flood proofing.
- The implied security encourages development of the important flood plain.
- Private interests which operate on the bed of the lake already know that the nature of their business is subject to fluctuating lake levels.

*1. The WDPP should be rearranged to pump only south arm brine to conserve salt and give more efficient evaporation. This would involve only a one-time expense.*

The preferred alternative in the Draft CMP is to extend the intake channel to the pumps and direct the flow from the breach such that a mixture of south and north arm brines will be pumped rather than just north arm brine.

- 2. Pumping should be considered on a case-by-case basis each year.*
- 3. We need to know at what elevation the state will definitely take action so we can plan to protect our interests. The state needs to obtain necessary permits and prepare to initiate pumping on a clearly*

*defined schedule so that everyone can see it is being accomplished.*

There are many reasons why the preferred alternative recommends starting pumping at 4208. These reasons are discussed in the Draft CMP on pages 33-39. It is intended under the preferred alternative that a procedure be established such that if the lake reaches 4208 the pumps can begin and there will not need to be any last minute debates on what should happen. This will allow the necessary permits and agreements to be in place and will give people who manage facilities in and around the lake critical information they need to make decisions about their facilities.

*4. Presuming that the best course of action would be to allow uncontrolled upward fluctuation because it may have unknown/undefinable positive consequences for wetlands or only inconsequential negative effects, when the document defines actual expected damages, this is difficult to understand.*

Most preferred alternative recommendations are compromises of competing interests and concerns on the lake. The Draft CMP attempts to explain reasons for the course of action taken.

*5. The plan incorrectly supposes that any structures that withstood the high lake levels in 1987 could withstand similar levels again without significant costs. Dikes settle over time, and many of the dikes that were raised during the flood years would have to be raised again.*

The comment is correct that a general assumption was made that facilities protected up to 1987 lake levels would

still be protected. Surveys (see the economic analysis on pages 213-220 in the Draft CMP) were made to attempt to learn where that assumption was wrong.

*6. The economic analysis for different lake level alternatives needs further scrutiny. The statement that wildlife managers see benefit in periodic flooding of managed marshes is worth the cost to replacing damaged structures. This "benefit" could cost Utah taxpayers \$19,391,000 (from Table 1-2 of the economic analysis) under alternative B.*

According to wildlife managers, the dikes around state WMAs are not intended to protect the areas from rising lake levels. Rather, the dikes are used to impound water. The base elevation of most dikes is at 4200 and the top is at 4205. Thus, the bulk of dike maintenance expenditures occurs in the lake level range of 4200-4205. Regardless of which WDPP policy alternative is implemented dikes sustain the same amount of damage for that range. The current strategy for the WMAs at this lake level range is to accept the rising lake and repair dikes after the lake recedes. This is done for two reasons. First, it is too expensive to consider "flood proofing" dikes above 4205. Secondly, WMA managers see some benefit of letting the marshes flood periodically in terms of rejuvenation of old decadent marshes.

*7. Because the state made cost-saving design alterations to the project, 12 percent of the lake's minerals were deposited in the west desert. The state must not shirk responsibility for those decisions to pursue a cheaper, politically favorable course of action today. WDPP operation should consider returning west desert salt to the lake and increasing the*

*evaporation area when lake levels are above 4205.*

Part of the reason why 12 percent of the lake's salt was deposited in the western desert was the intentional continuation of pumping into the summer months (to provide feed stock to Magcorp's Knolls evaporation ponds). Had pumping been stopped in March or April of 1989 at the end of a planned cycle, or continued through the winter of 1990 to complete yet another full cycle, the salt loss to the west desert would have been greatly reduced.

Regarding the adverse effect on salinity resulting from previous operation of WDPP, it is appropriate to pursue the most cost-effective remedy. Modification of the causeway is much more cost-effective than operating WDPP to change south arm salinity. Should WDPP be initiated again, full-cycle pumping would be implemented which would return much of the west desert's sequestered salt back to the lake.

*8. The table (page 235) does not provide sufficient detail for UPRR to verify reported damages. A detailed breakdown of damages is needed.*

No disagreement. A more complete breakdown of rising lake level damages can be found in the Draft CMP economic analysis section. These tables provide estimates on maintenance and capital expenditures in addition to revenue losses. It is important to remember that the data are to be used to compare alternatives rather than an accurate predictor of losses or impacts.

*9. The state should keep the trigger elevation at 4205 and modify the WDPP to pump from the south arm and return*

*either concentrated brines or north arm brines to the south arm.*

There has been and continues to be support for starting pumping at 4205 rather than 4208. Reasons for selecting alternative A over alternative C are discussed in the Draft CMP.

*10. The WDPP EIS did not adequately address all major issues associated with this project. Ownership of the brines put on federal land was never clearly determined and mineral related environmental impacts addressed. The USAF did not authorize the state to inundate their lands during pumping. The modified design did not mirror the EIS analysis, therefore there is no provision for pumping out of the south arm. In fact, even pumping out of the north arm is questionable today due to IMC Kalium's evaporation pond system in Clyman Bay. These facts and others seem to contradict with your proposed management alternatives.*

*11. A new WDPP EIS or an amendment would need to be prepared that adequately addresses both the true environmental impacts of this project and considers the changes that were made in its design during and after the project was in operation. A further assessment of the environmental impacts of the WDPP to the lake and west desert, would be required before pumping can resume.*

Issues relating to the adequacy of the WDPP EIS for future pumping will be considered in the normal course of business as plans are made to resume pumping.

*12. Allowing maximum lake-level variation provides the greatest benefit to the public, economic benefits for future*

*generations, best way to sustain a functioning GSL ecosystem, prevents salt loss and imbalance and a false security in reliance of the pumps to protect investments and may inadvertently foster inappropriate development which compromises environmental resources as well as results in costly actions to mitigate for flooding.*

*13. No stakeholders should expect to be rescued from rising lake levels. Lake levels cannot be controlled by DNR or the state.*

The preferred alternative of pumping at 4208 does allow a wide range of natural variation in the level of the lake. The Draft CMP has attempted to convey the message that there is no attempt to control the level of the lake. The WDPP is an evaporative system which is designed to increase the natural evaporation from the lake and help reduce peak elevations during high "flood" levels of the lake.

*14. WDPP configuration would be more compatible with USAF and its operations and help with conservation of state resources (salt returned to the lake, minimal cost and savings over time) if the WDPP included a simple ditch to collect drainage over the Newfoundland Weir to allow salts to be returned directly to GSL.*

Issues concerning the return flow across the USAF area are as yet not resolved, but will be addressed when permits for resuming WDPP are issued.

*15. The state proposes to return brine flow during WDPP to the south arm. Will flow be cut off to the pumps or the north arm through the breach?*



The short answer is no. The conceptual design is the return flow will either be returned in late December and early January when the pumps are not operating, or the dense return flow brines will flow under the lighter south arm brines at the point where the return flow enters the north arm and the brines from the breach enter the inlet channel to the pumps.

#### **Issue 1.4 Locomotive Springs**

##### *Reasons supporting the preferred alternative*

- Wildlife and habitat should be given top consideration and DNR should make every effort to improve the water supply.
- DNR should ensure sufficient water to maintain wetland habitat resources.

#### **Issue 1.5 Water rights**

##### *Reasons supporting the preferred alternative*

- It is appropriate and desirable to discontinue new diversions from GSL at extremely low lake levels.

*1. We recommend a hybrid between alternative A and B with priority be given to maintaining the freshwater deltas along the east side of the lake by protecting existing water rights, protesting proposed water filings, filing diligence claims on unallocated drain flows and investigating acquisition of new rights from the conversion of agricultural lands to residential housing. The focus of water rights acquisitions should be on all freshwater inflows to the lake not just WMAs. It would be appropriate and desirable to discontinue new diversions from GSL at extremely low lake levels.*

The need for implementing alternative B in combination with the selected alternative can be better determined when and if new diversions are requested. Right now mineral producers have the right to extract three times as much as they divert now. Existing rights have much greater potential to affect GSL levels.

*2. Alternative A could be implemented as a contingency plan that works in conjunction with alternative B. It is assumed that the goal is to maintain WMAs and other critical habitats at all lake levels. Alternative B also addresses the same management goal as A, but the purpose and effectiveness should be clarified in regard to the water requirements of the existing wetlands to answer the question if proposed new diversions could meet wetland water needs if they were discontinued and converted back to "instream flow" to support wetlands during dry periods. The definition of "beneficial use" may have to be modified to allow "instream flow" to supercede other uses during dry periods.*

The commentators suggested that the "...definition of "beneficial use" may be modified to allow "instream flow" to supercede other uses during dry periods." Currently, Utah water law requires that water be distributed according to the priority date of the underlying water right. During dry periods, water rights for domestic use and public supply can be taken ahead of rights for other uses when the priority dates of the involved rights are equal. Any change to this arrangement will require legislative action.

*3. DWRi and DWRe do not consider the needs of the lake when permitting water*

*projects or water rights appropriations upstream. DNR and the state need to broaden their interjurisdictional role and responsibilities in this area and include the inflow needs of the lake within the drainage basin.*

Section 73-3-8 of the Utah Code Annotated guides the State Engineer in deciding whether an application will be approved or rejected. Among the things he must consider in the discharge of this responsibility are public welfare, public recreation, and the natural stream environment. Any changes to, or broadening of, this responsibility will require legislative action.

*4. Conversion of agricultural lands to hardened surfaces due to development and its effects on water for wetlands is a valid concern. Surface runoff is redirected to stormwater and wastewater treatment systems. This reduces the number of water sources from the natural condition and increases flows at concentrated sites.*

The rerouting of surface runoff and drainage from diffuse sources to concentrated sources due to urbanization is the responsibility of local government through their planning processes and grading ordinances. Any remedy of the commentator's concerns needs to be pursued at that level.

### **Issue 1.6 Embayments**

#### ***Reasons supporting the preferred alternative***

- DNR should do everything in its power to sustain and support the GSL ecosystem.

#### ***Reasons opposing preferred alternative***

- The Legacy Highway should go from I-80 to Antelope Island, to Fremont

Island, to Promontory Point, then north to I-15.

- 1. The south shore-islands-Promontory route for the Legacy Highway would: a) eliminate buying expensive farm and residential land and eliminate wetland problems; b) create a huge recreation facility (freshwater for fishing, hunting, boating, etc.) which would be a huge boost to the economy; c) freshwater storage close to SLC could pump this water for culinary needs could eliminate the Bear River Dam and tunnel project.*
- 2. Whatever is decided should be based on the ultimate objective for the lake.*
- 3. We agree that freshwater embayments' decisions should be based on the ultimate objective for the lake. DNR's ultimate objective is to protect public trust resources, ensure sustainability and allow for reasonable multiple uses. Freshwater embayments would significantly impact wildlife, habitat and other important resources and would not be consistent with DNR's ultimate objective.*
- 4. We would like the plan to clearly state the ecological problems to freshwater embayments along with the economic reasons for this policy.*

Proposals have been funded and studied. Impacts of these proposals do not appear to be economically feasible and environmentally sound. The proposed locations are on sovereign lands which the state legislature has authorized to be set aside for wildlife purposes (23-21-5). DNR does not support these proposals because of extensive impacts on sovereign lands, lake resources and geologic hazards. The likelihood that impounded water will be suitable for the intended use (drinking water, as a fishery, hunting and boating opportunity) is questionable for several reasons. The

lake is considered a special aquatic site and is considered under the same set of required permits and regulations as wetlands (Corps of Engineers).

The concept of building a highway route across Antelope and Fremont islands on to Promontory Point, with the causeways between the islands being used to impound so-called fresh water, has been discussed many times and investigated by the GSL Development Authority, created by the 1989 Utah Legislature. The following quote is from the Report of the GSL Development Authority to the Governor and Legislature, dated December 10, 1990.

“Through these meetings and other activities, and within the budgetary constraints imposed by the legislature, the board attempted to assemble and evaluate all of the available information concerning inter-island diking and Lake Wasatch, with particular emphasis on questions of technical feasibility, cost and environmental impacts, etc. The board did not commission any new technical or engineering studies.

Based on the meetings and the information reviewed, it became clear that the most important questions concerning the feasibility of Lake Wasatch were the water quality of the new freshwater lake, the impact on wetlands adjacent to the lake, and the cost of diking and related facilities.

In November 1989, the board issued a broad solicitation for written comments from interested local governments, agencies, groups and the public concerning Lake Wasatch and inter-island diking as described in

the legislation that created the authority. Comments were accepted until February 20, 1990. Sixty-six written comments were received, and all were reviewed in detail by members of the board. A summary of those comments is attached as Attachment 1.

With some notable exceptions, the comments were opposed to or skeptical of Lake Wasatch. The most common concern expressed was the loss of, or damage to, existing wetlands along GSL, followed closely by concerns about water quality. Comments also questioned the cost of Lake Wasatch, raised safety questions associated with the stability of the dikes, particularly in an earthquake, questioned whether enough unappropriated fresh water existed to fill the new lake, and cited impacts to existing GSL industries. Proponents of inter-island diking cited the economic and recreational benefits associated with a large, freshwater lake adjacent to Utah's population center. Technical information gathered and evaluated by the board generally supported the substance of all of these comments.

Based on our year-long review of Lake Wasatch, and the information provided by state and federal agencies, local elected officials and Utah citizens, the Board of directors of the GSL Development Authority offers the following recommendations to the governor and the legislature.

#### Recommendations

1. Development of "Lake Wasatch" through a GSL inter-island diking

project, as defined in Utah Code Ann. § 17A-2-1603(9), does not appear to be economically or environmentally feasible.

The members of the Board agree unanimously that inter-island diking, and the proposed Lake Wasatch, does not merit further consideration. The members differ, however, in their reasons for reaching this conclusion. Individual board members were influenced, to a greater or lesser extent, by all of the following factors: adverse impacts on wetlands; concerns over water quality; impacts on current GSL industries, including the mineral industries; the economic cost of diking, pumping and transportation facilities; and impacts on water rights.”

The concerns listed in the Draft CMP are those expressed by the GSL Development Authority and others that have since been raised. The preferred alternative of the Draft CMP was directed at the best interest of the lake as a whole. Such an embayment would have very poor water quality and would not be suitable for culinary use.

*5. The draft does not acknowledge our water right application for 450,000 ac-ft of water.*

*6. Our water right is very different from other filings on the lake and should not be considered as such. The statement "...but there are no proposals at this time" does not consider our proposal. We formally request that you include our water right application and our proposal for GSL in the plan.*

The SCCT portion of the Draft CMP will be modified (Spring 2000) to reference the water right filed by this respondent and the three other water rights on file

which propose diking portions of the lake. This respondent contends that their “water right is very different from other filings on the lake and should be considered as such.” This is making a very fine distinction. True, most of the water rights on the lake are for mineral extraction, while they are proposing a reservoir. However, their water right is not very different in its ultimate effect on the lake from the three other water rights on file which seek to dike off part of the lake. These other three water rights are senior in priority to this respondent and would have to be acted upon first.

Our statement that “there are no proposals at this time” will be modified to state that “there are no active proposals at this time.” This is because all four parties have asked the State Engineer to withhold action on their water right application until further notice.

## **Issue 2.1 Salinity**

### ***Reasons supporting the preferred alternative***

- If we do nothing about the causeway and destruction of brine shrimp then we have failed in our attempt to be good stewards of the land.
- The causeway has affected the lake adversely. I am not opposed to deepening the breach.
- Common sense tells me that if GSL were a single system again, as opposed to two distinct systems, there would not be a salinity issue today and that GSL will probably not become one system again in my lifetime. I urge you to adopt alternative A.
- As a brine shrimper it would be in my best short-term interest to support alternative C. As a taxpayer I

understand that this undertaking would be very expensive, and a lesser opening may be adequate to correct the salinity imbalance. I am willing to accept an economically viable compromise whereby the breach is deepened by at least four feet and the culverts are kept clear.

- The impermeable nature of the causeway has made two lakes out of one. The state must reverse the unnatural effect this man-made barrier has had on the lake by deepening the breach and adequately maintaining the culverts.
- The most cost effective long-term remedy to increase the exchange of brine is causeway modification.
- The trend for south arm salinity is outside the historical range. Something has to be done to address the ecological effects.
- It is imperative that the salinity issue be addressed now. Anything that can be done to mitigate the effects of the causeway should be done.
- To take no action and make no recommendations due to insufficient information is generally not the option of managing agencies. DNR is taking the correct approach in using brine shrimp as at least one important indicator of lake conditions pending better information.
- The unnatural interference with and alteration of algal species is devastating to brine shrimp and is a serious threat to avian species that rely upon a healthy ecosystem and upon a natural brine shrimp population cycle. Managing salinity levels to preserve the health and productivity of GSL ecosystems is in the public's greatest interest.
- Alternative B is better, but in view of significant cost and time requirements

to implement alternative A is a more cost-effective near-term solution.

- Alternative A is based upon the most biologically, ecologically and economically sound policy.
- The brine shrimp industry is particularly unified in its strong support for immediate, serious and substantial measures to address salinity issues.
- I am worried that birds will be affected if the salinity trend continues.
- Lack of decisive and meaningful government policy in the face of imminent collapse of the ecosystem was a prominent factor in a decision to sell the company.
- The lake is marching toward a time when the north arm will be saturated all the time and the south arm will become a polluted brackish body of water. Increasing the flow is the only way to avoid this environmental disaster.

#### *Reasons opposing the preferred alternative*

- The north arm will continue to be vastly higher in salinity than the south arm.
- The best thing for the lake is to have causeway breaches sufficient to equalize salinity.
- None of the alternatives will return the lake to a more natural pre-causeway salinity.
- The more natural salt balance is the right goal and in high water years the four-feet-deeper breach will work, but no mixing would occur when the lake level is lower than the breach.
- The goal to bring south arm salinity back to the post-causeway/pre-flood scenario may be insufficient. The historic record indicates that there is

likely a greater disparity (salinity) than the plan discusses.

- The plan emphasizes the need to reduce the difference in north and south arm brine concentrations to prevent environmental degradation in spite of the SRC's assessment that the lake is not on the verge of an environmental disaster.
- This recommendation is based on a model that has been criticized by both the SRC and IMC Kalium.
- The contention that the causeway has caused the salinity differentials to depart from the historical ranges of salinities and that the problem is increasing cannot be substantiated from available data or the model analysis.
- The transfer of salts from the south arm to the north arm is transitory when viewed over decades. No long-term change is taking place. No data yet points to a long-term change departing from historical ecological ranges.
- There is no data to suggest that the brine shrimp and the ecosystem will not survive the freshening, if indeed it occurs. Freshening of the current magnitudes has naturally occurred in the past without damage to the ecosystem.
- We do not believe that drastic actions must be taken now to reduce the salinity differential between the north and south arms. The state has time to ensure that its assumptions and conclusions are correct. Bi-directional flow through the breach is occurring and the culverts are now open, making bi-directional flow possible resulting in further net transfer of salts (salinity) to the south arm.

- The proposed incremental approach is inadequate to fix the problem of salt imbalance.
- Allowing salinity levels throughout the lake system to be determined by natural processes provides significant benefits including: maintaining wetland habitat diversity; maintaining appropriate conditions for brine shrimp and the organisms they depend on; equitable conditions for all mineral extraction enterprises; and the most cost effectiveness in the long run.
- Alternative A will not impact the salinity difference.
- The only alternative that addresses the overall goal is B.

*1. Culvert cleaning could be stipulated (for lower than average lake levels and) whenever salinity differences exceed ten percent and cleaning could be made easier by installing large grates and walkways.*

In order for the two culverts to effectively influence south arm salinity they must be maintained in a cleared condition all the time, not just when the salinity differences exceed 10 percent. This is because of the relatively small volumes of north-to-south flow that passes through them, and the fact that the culverts are difficult to keep clear of debris (full 20-foot depth). Concerning the grates, it is not large material that normally plugs the culverts which could be caught by the grates, such as logs and floating debris. The material that normally plugs the culverts is gravel (1/2-inch to 2-inch material) that is brought in by the storms. This material would pass right through any grate structure and still fill the culvert openings. Walkways may be impractical to build and maintain as

the causeway is a constant stage of repair.

*2. If the four-feet-deeper breach is not good enough, part of the breach should be lowered the full eight feet. This would be enough for mixing to occur at low lake levels and would facilitate navigation.*

*3. It would be foolish not to incur the minimal additional cost to deepen the breach to 4190 since the most significant portion of the cost of lowering the breach is due to mobilization, protective diking, dewatering and demobilization.*

*4. The breach should be cut deeper and the culverts should be reopened and maintained. This would improve mixing to bring the north and south arms salinity levels closer together.*

It is a well known fact that both culverts can be partially to completely filled overnight during storms, especially during prolonged north-wind events. It is also known that the s-n movement of brine through the two culverts may only remove debris to a shallow depth; this does not constitute the culverts being completely clean. The railroad has acknowledged its responsibility to keep the culverts open. DFFSL will hold the railroad to its word to keep the culverts open.

There are a number of issues related to deepening the breach, and the effect that cleaning to different depths would have. The ultimate concern with deepening the breach opening, fully or partially, four feet or ten feet, lies in whether deepening the breach opening will compromise the structural integrity of the pilings and/or the bridge structure itself.

*5. The railroad fill has settled on a daily basis since day one. As the railroad fill*

*continues to settle and more fill is dumped on a continuing basis, less water will pass through the fill.*

Logic would agree with this statement.

*6. A breach in the east end of the causeway with a sill elevation of 4196 and a boat passage that would allow for boat traffic would address several issues. It would partially reestablish pre-causeway circulation if the west breach was modified. The Behrens Trench should not be affected by the additional breach.*

See issue 8.2 comment response #1,2 on page 81.

*7. We should turn the lake back to its more natural condition beginning with widening the causeway breach.*

*8. The Planning Team has the task of creating a plan for maintaining the GSL's status in all aspects within criteria that will allow full enjoyment and be ecologically sound. I strongly urge you to decisively propose modifications to the railroad causeway to bring the lake back to its pristine condition at the current lake level.*

*9. The best condition for the lake was before the causeway was constructed. Although we cannot go back we should strive to minimize the effects.*

It would help if "its more natural condition" was better defined such as stipulating a time period and/or the salinity conditions the respondent had in mind. Be assured, this is an issue that the Planning Team has been wrestling with for quite some time. This is one of several "better times" that have been suggested to DNR. The effects of compartmentalization of the lake on salinity balance, lake circulation and

ecological productivity are known and demonstrated. Management alternatives and actions should remediate these impacts.

*10. I question some of the comments of the SRC's regarding the healthy versus unhealthy condition of the GSL ecosystem. Their recommendation for several 10s to 100s of years of data is obvious but not very practical considering the current concern for the resource.*

Comment is well taken.

*11. Timely action and funding must be allocated soon. I urge DNR to fast-track whatever management plan is adopted.*

Agreed.

*12. Salinity differentials between east and west sections of the lake should be studied.*

A cooperative study between the USGS and DWR related to the brine shrimp in the south arm is addressing this issue. At least there are sampling sites throughout the south arm where samples are collected and salinities determined.

*13. The state must make sure the culverts are modified so that keeping them clear is feasible. Under the current design, storms fill the culverts back in and effectively reverses the railroad's cleaning efforts.*

It is the railroad's responsibility to keep the culverts open and clean. See comment response #1,2,3,4.

*14. The state must monitor the effect of alternative A to determine if the modifications are adequate to prevent,*

*at the very least, any further divergence in the salinity of the two arms.*

It is part of the proposed action to monitor the effects of lowering the breach and having the railroad keep the culverts clean.

*15. Channels should be dredged in the lake bed at the culverts and breach to encourage flow of dense north arm brine to the south arm.*

*16. To assure that breach deepening achieves its objectives the two culverts must remain totally clear and open. The state must develop minimum specifications and monitoring objectives for culvert cleaning and operation to ensure that the railroad is meeting its responsibility to keep the culverts maintained and functioning properly.*

Depending on the final depth of the breach, channels to bring north-arm brine into the breach opening would not be as important as a channel to convey the north arm water from the opening out into the depths of the south arm. As presently constructed, it is doubtful that channels are needed to help move north arm brine into the two culverts. Outlet channels might facilitate heavy brine movement into the depths of the south arm. Monitoring the effects of implementing the selected alternative may lead to the conclusion that additional measures are necessary.

*17. If deepening the breach and keeping the culverts open does not get the desired results we need to quickly take further action.*

*18. Intuitively we suspect that another breach on the east end of the causeway is necessary.*

*19. DNR should retain a civil engineering firm to scientifically*



*determine the exact number, size and depth of breaches that would be required to restore lake salinity to a more natural state.*

In a recent engineering evaluation by PSOMAS, studies were conducted to determine the effect of deepening the existing breach opening to 4193 and 4190 (with and without the culverts being open). PSOMAS also proposed five alternatives as potentially workable solutions to the lack of bi-directional flow in GSL. The USGS water-salt balance model is a very important tool in this endeavor.

*20. It is important that the breach be deepened as much as possible ( i.e. 4190) to get the maximum return of heavy brine from the north arm.*

See comment responses #2,3,4 and #17,18,19.

*21. USGS continues to report north and south arm lake elevation differences with a 0.7 foot error, which shows twice as much elevation difference as actual. This elevation difference is a key parameter in the causeway model. As a result, recommendations based on this model have questionable reliability.*

As part of developing and calibrating the model, the USGS has made corrections to the Provisional Lake Level records. The elevation data containing the 0.7-foot error between the north and south arm elevations has not been used in the model runs.

*22. Lake concentrations are reported as a simple average of sample taken every five-foot depth from top to bottom. This averaging assumes the lake surface is constant at elevations, which is not the*

*case. Giving the bottom sample the same weight as the top sample of the lake, when calculating the average concentration, reports a higher salinity than actual.*

The respondent fails to identify where he takes issue with the use of these “simple average values of samples taken at every five-foot depth from top to bottom” (general discussions, USGS model, causeway permeability evaluations, or where?). If it is in regards to the USGS model, the issue is moot. The USGS, in their model of the lake, make volume-weighted/concentration calculations to obtain both overall north and south-arm brine concentrations and/or salt load calculations. That is, they take into consideration the volume(s) of the brine of a given density(s). For general south- and north-arm comparisons, such averaged values may not be totally accurate, but suffice to make a general point or comparison.

In general, and in citing older, stratified south-arm data, there were many more samples from the homogeneous upper brine than through or below the stratification interface into the lower dense brine. Thus, this sample distribution somewhat limits the influence of the greater-density deep brine.

It is doubtful that the conclusions made from averaged data vary greatly from those made with carefully volume weighted data.

*23. It is a complicated task to take 30 years of salinity measurements and calculate the actual concentration of the entire south arm by weighting the concentration at different depths by the lake volume at those depths. This complication is not necessary if we take*

*a simple average of the top 20 feet, the most significant biologically, and trend those concentrations since the construction of the causeway.*

For some applications the respondent's method of calculating south- and north-arm concentrations is adequate, but for others, it is not. If you are looking at the concentrations of the brines that are available to and used by the industries, for recreation, or for the most part of the brine shrimp industry question, this method is very suitable. If you are looking at the interchange of brines through the causeway, or calculating the salt loads of the north and south arms, it is not suitable. As a caution, whether you average the upper 20 feet or volume weight the entire water column, the method you use must be identified within your discussion of methods.

*24. A misunderstanding of the cyclic nature of salt exchange, driven by rising and falling lake cycles, was the basis of early opinions formed by DNR. This could have been avoided by utilizing the GSLTT. The public has been misled about salinity issues of the lake.*

*25. Continued analysis and study by the GSLTT is necessary before any conclusion can be drawn as to actions that should be taken to affect salinity levels in either the north or south arm.*

Concerning the first sentence, the respondent fails to make a clear statement about what the misunderstandings are about the cyclic nature of salt exchange, and what early opinions were formed by DNR. It is not likely that the GSLTT would have resolved the difference between what DNR says is happening and what this respondent says is happening regarding salinity. Also, the respondent fails to

identify which salinity issues the public has been misled about, or whether these issues are simply a matter of differences in interpretation and opinion between industry and DNR. The study and analysis conducted to date is sufficient.

*26. The data and analyses presented are not adequate to scientifically conclude that the permeability of the causeway has decreased significantly, if at all. Other causes such as functionality of the culverts or effects of pumping and natural processes that may have been significantly mis-estimated.*

The respondent fails to identify which data and analyses are being referred to or wherein other causes have been significantly mis-estimated. Otherwise, these comments are simply an unsupported opinion.

*27. Permeability tests of the causeway fill would go a long way toward reducing the guesswork upon which the plan is based.*

DNR would certainly welcome the offer to fund comprehensive permeability tests by a certified geotechnical engineering firm, as they would be 1) fairly expensive, and 2) would be somewhat disruptive of traffic on the causeway. Such information would certainly be of value in verifying the USGS model and settling questions about the causeways present permeability, and alleged changes in its permeability. Whatever the cause of the salinity imbalance it is important that something be done now to address the salinity situation.

*28. Charts of Appendix I neglect the effect that plugged culverts have had on post-breach head differentials. The plugged culverts are arguably a large*

*cause of the increased head differentials noted rather than decreased permeability of the fills. The culverts are now open and additional data should be collected on the performance of the culverts.*

Correct. The effect of the post-flooding plugged culverts was neglected in constructing figure “a” of Appendix I. What is of real concern is not so much the contributions of the individual

conduits (culverts and the connected openings through the fill material), but the overall permeability or of the causeway before (72-76 and 77-83), compared to its permeability after its buildup during the high-water years (92-97). This is not to say that the condition of the culverts and whether the lake is rising or falling, does not have an affect, however. This can be seen in the following table.

Years	East s-n/mo	East n-s/mo	West s-n/mo	West n-s/mo
72-76	722 cfs/51	59 cfs/16	977 cfs/51	28.1 cfs/3
77-82	599 cfs/52	109 cfs/46	676 cfs/54	135 cfs/48
92-97	618 cfs/8	0 cfs	155 cfs/8	0 cfs

The above data are average s-n or n-s flows at the respective East or West Culvert/ the number of monthly flow readings included in the average (USGS culvert-flow measurements). During years 72-76 the lake was climbing, the head differential was high as was the s-n flow through the culverts, and return or bidirectional flow was minimal. During years 77-82, the head differential had dropped as inflow had slowed, and bidirectional flow was taking place. From 1992 until 1997, the USGS did not take flow measurements at the two culverts because of the extremely high lake levels which had completely submerged the culverts. Measurements were made during the first nine months of 1992, however, and are shown in the above table.

The statement made by the respondent that the “two culverts through the causeway fill were essentially plugged between 1992 and 1997...” may or may not be correct, is most likely an assumption part, and may or may not be verifiable since the culverts were under water. If the two culverts were open to the extent measured during the first nine months of 1992, then the increase in head differential attributable to decreased permeability/transmissivity of the causeway may be valid.

*29. There is a concern with baseline assumptions on pages 41 and 374. Under natural conditions with no causeway, fresher south arm brines would still have to migrate north and west to equalize lake level and salinity differentials north to south would still exist. It is hard to argue that north arm*

*brines would not naturally have somewhat higher salinities.*

There is no argument that there was some salinity differential between east and west, or from north to south, now, under present conditions, or prior to the causeway being constructed. Pre-causeway conditions are difficult if not impossible to document because: 1) data are scarce, and 2) there are few instances if any where there were samples taken on the south end of the lake and on the north end on the same date. The differences in salinity from east to west can be documented at the present time from the work being done by the USGS in conjunction with the DWR wherein samples are taken from a number of sites throughout the south arm within a day or so of each other. These differences are very minor (perhaps within a percent or two) compared to the dramatic

differences that currently exist between the north and south arms of the lake (15+ percent).

*30. There is no justification to use the past 150-year record as the sole measure of acceptable salinity ranges for GSL. The ecosystem is able to adjust and recover from such events where salinity is substantially less than what is indicated solely by the past 150-year record. Adoption of the more restrictive 150-year criteria is not supported by the public interest criteria of safeguarding GSL's ecology. Salinity at 4217 is better supported by this criteria. If ecology is a measure of public interest, then salinity at 4217 should be adopted as the possible historical range for the freshening of GSL and the south arm.*

There is no argument that the lake's level and brine salinity have fluctuated widely, and that the brine shrimp and the ecosystem have survived these fluctuations from very fresh (4217) to total saturation and possibly total dryness (4169+/-). There is a social element to describing the reference condition for an ecosystem.. The GSL ecosystem has experienced and recovered from low salinity, but a lot has happened in the approximately 300 years since the last time GSL reached 4217. The social element takes into account at least three factors. First, the natural capacity of the ecosystem to absorb the effects of low salinity 300 years ago was substantially greater than it is today. Human-caused changes around GSL, in the region, and along the flyway have substantially reduced the natural ability of ecosystems to recover. Second, the impacts of low salinity 300 years ago probably were politically acceptable because the ecosystem was still capable of accommodating demand for public use

and enjoyment of GSL lands, waters and resources. Third, 300 years ago the effects of low salinity were relatively short-term and recovery was likely. Under the existing conditions on GSL, with changes due to decreased causeway permeability and the loss of salt to the west desert, a low salinity regime for a given lake level in the south arm is a permanent change. (Exhibit 6)

*31. Modeling of GSL salinities has two problems:*

*A. The modeling does not include an evaluation of the impact of the incorrect design of WDPP has had on salinity. The correct analysis must include a comparison to what salinity differentials would have been if WDPP pumping and return of brine had been solely from the south arm rather than solely from the north arm.*

*B. The model was calibrated only through adjusting causeway permeability. The SRC points out that the model consistently under predicts elevation differential between the two arms prior to the causeway breach and consistently over predicts the elevation differential after the breach. The SRC suggests that there may be a systematic problem with the calibration based solely on causeway permeability. This systematic problem may be just as readily explained as overestimation of original causeway permeability and underestimation of culvert flow.*

A lot of work has gone into the model, and the concerns expressed here have already been addressed, or can be simulated with the model. Model calibration has gone far beyond the latest information that UPRR has received.

*32. The state needs to do additional study prior to deciding upon alternative*

*A. We are concerned about maintenance costs for a deepened breach. Regular or continuous dredging may be required.*

*33. DNR should take a more aggressive approach in remediating the salt imbalance.*

*34. To maximize the effectiveness of alternative A, enhance the cost-efficiency, and to minimize any further destruction of the lake's ecosystem or an inalterable damage to its species these actions must be implemented immediately! We strongly recommend deepening the breach to 4190. Time is of the essence!*

Maintenance of the breach is a state responsibility. An additional study has been conducted by an independent engineering firm. See comment responses for #17,18,19.

*35. Steps should be taken quickly to remedy the salinity problem or the environmental impact could be severe and difficult to reverse once the ecological damage has been done.*

*36. It is imperative that the salinity problem be addressed immediately to preserve my family's livelihood and the preserve GSL ecosystem.*

*37. Anything to mitigate the effects of the causeway, especially cleaning the culverts and deepening the breach should be done quickly to negate the effects of the causeway on salinity.*

Be assured that DNR is moving ahead as fast as possible with this very concern in mind.

*38. Due to the identified potential for major water quality concerns within Farmington Bay, changes in shoreline vegetation patterns and Artemia productivity we recommend that Farmington and Bear River Bays be*

*included when considering salinity differences within GSL.*

*39. There is no justification to eliminate Farmington Bay from consideration of salinity balance measures. The causeway should be made more permeable to restore lake circulation, salinity balance and to remediate eutrophication.*

Farmington and Bear River Bays have been addressed within the plan and/or baseline material that has been used in developing the plan. The need for more or less salinity in Bear River and Farmington Bay can be addressed in WMA plans for these areas.

*40. The statement regarding south arm freshening on page 163, could be emphasized. The salinity imbalance in the lake is well beyond any disparity that is appropriate for a viable and healthy ecosystem in the lake. The lake is in crisis.*

Agreed.

*41. The railroad must be prohibited from dumping into or filling any part of the breach opening. The state must regularly inspect the breach and monitor the railroad's actions. Fill and debris currently blocks the causeway breach.*

Flow measurements through the breach are routine monitoring activities.

*42. Could the railroad causeway be abandoned? This would eliminate maintenance, achieve the desired goal with the least amount of long-term expense.*

The causeway exists under a valid land use authority issued by DFFSL. Unless land use authorizations are determined to be inconsistent with the Public Trust

Doctrine they will remain valid. There is a national defense element to the route across the lake. It also lessens the railroad's traffic bottleneck between Salt Lake City and Ogden. The railroad has no intention to abandon the route across GSL.

*43. Data suggests that making the causeway more permeable with an additional 400-foot breach would be the most effective remediation measure.*

Given the objective to restore south arm salinity to its pre-flood range and the likelihood that alternative A can achieve this objective, alternative A is the most cost effective.

*44. The breach should be deepened to at least the bed of the lake. Actually, DNR should recommend a deep water breach to allow heavy subsurface bi-directional flow, even if legislative funding is not an option. This would be the best solution for salinity, navigation, and harbor and other sub-issues brought forward (private lands and search and rescue access, law enforcement and recreation) and eliminate the need for costly and redundant marina facilities in the north arm.*

See comment responses #2,3,4 and #17,18,19 regarding deepening the breach and recent engineering studies. DNR has concerns about ready access to the north arm of the lake considering there are two important bird rookeries that could be disturbed or destroyed by irresponsible individuals.

*45. The causeway has caused unnatural division of the lake which is ecologically destroying the lake. I wish for a more complete and the quickest solution possible, I support alternative A to*

*deepen the breach and clean and redesign the culverts.*

*46. Immediate action are necessary to reverse the irreparable damage.*

Agreed. See comment response #35,36,37.

*47. I believe it is a waste of time and money to deepen the breach if it is deepened to 4195 and extended and the culverts are not cleaned and maintained to improve return north to south brine flow.*

Agreed. See comment responses #1,2,3,4.

*48. Has DNR investigated installing turbine type pumps into the existing culverts and pumping in the summer from south to north to reduce the head differences and reversing the direction during the winter months?*

DNR has received numerous suggestions to equalize the salinities between the two arms of the lake. This suggestion is not unlike some that have been received and evaluated.

## **Issue 2.2 Salt locations and quantities**

### ***Reasons supporting the preferred alternative***

- DNR must continue to collect lake chemistry data to make informed management decisions.
- The inventory is acceptable scientific assessment purposes and not just a move to collect royalty for salt precipitated on pond floors that has no economic value.

### **Issue 3.1 Water quality**

#### ***Reasons supporting the preferred alternative***

- Alternative A is supportable only provided there is aggressive research as to the effects of inflows and base data is developed for numerical standards.
- Recognition that the present lake level protection will cause further degradation is essential.
- We need to look at cleaning up what we dump into the lake.
- We disagree that narrative standards necessarily do not present the highest level of protection and that standards may become ineffective if water quality deteriorates.
- If numeric standards are established then discharge limits would be set based on those standards and would generally allow pollution up to the standard. Narrative standards are generally more restrictive, with background used as the beginning point for setting effluent limits.
- Establishing numeric standards for GSL is neither financially nor environmentally prudent.
- The existing general policy should be strengthened.
- The water quality and quantity concerns are real. Given projected population increases pressures on the lake will increase substantially.

#### ***Reasons opposing the preferred alternative***

- Although alternative B is expensive, more measurable standards would provide the highest level of protection.
- Current regulation by DEQ is sufficient. There is no data presented in the plan that suggests that GSL water quality is deteriorating.

- Every effort should be made to find feasible ways to prevent additional pollutants from being delivered to the lake.
- Alternative A is ambiguous and insufficiently specific. We recommend numerical criteria.

*1. To improve water quality you should continue to inform the public of pollution that comes results from their bad behavior.*

Water quality problems that exceed standards drive public information and response priorities. DWQ addresses water quality problems in a local watershed with the local stakeholders. Partnering efforts like the "We all Live Downstream" and other "water conservation" campaigns help to educate the general public.

*2. Taxes on lakeside industries should be considered as a means of funding requisite studies for numerical standards.*

Lake-side industries would, in response, suggest that water quality is a basin or watershed wide problem since GSL is a drainage basin and that all people and dischargers within the entire watershed are responsible. It would be difficult to use this reasoning to attempt to acquire funding from heavy lake industries.

*3. No information is presented to explain or justify DNR's desire for changes to the standards for GSL and some tributaries.*

DNR's impression, as explained on page 238 of the Draft CMP, was that existing standards would lead to degradation over time. Only anecdotal information is available at this time. Additional

monitoring may provide more substantial information. As DNR learns more about how the standards are applied, as in dealing with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) ground water remediation projects, DNR can better access options for promoting water quality.

*4. The plan properly recognizes the expense and difficulty of developing numeric standards, but we disagree that numeric standards would necessarily "improve" standards and would result in the "highest level of protection." It should not be assumed that numeric standards provide better protection than narrative standards.*

DNR agrees that numerical water quality standards may not provide the highest level of protection for GSL resources since dischargers would then be allowed to pollute up to these levels. According to DWQ, industry usually prefers the development of numerical criteria since guidelines are set and they know their limitations. This generally makes permit administration easier but reduces DWQ's ability to evaluate on a case-by-case basis and respond accordingly.

*5. Perhaps rather than focusing on getting resources to develop numeric criteria, it would be more productive to focus resources on improving knowledge of the chemistry and ecology of GSL to better determine appropriate effluent limits in any given case.*

DNR agrees that it would be more productive to focus resources to improve knowledge of GSL chemistry and ecology to better understand lake processes and define or determine appropriate effluent limits. DWQ

suggested that this would help identify serious problems requiring response (lake and tributaries).

*6. DNR needs to work with local counties and cities to educate, maintain and protect the lake and its tributaries' water quality.*

This planning effort has involved a considerable amount of coordination with counties around the lake in investigating water quality programs and monitoring projects. Counties around the lake are concerned about water quality and are often involved with monitoring, storm water, wastewater and other water quality issues. Tributaries entering the lake are monitored as close to the lake as possible. USFWS and USGS are also investigating contaminants. DNR will continue to coordinate and work with stakeholders, state regulators, local and federal government in protecting the lake and its tributaries.

*7. A public water supply discussion should be included in the plan. We are anticipating possible discharge of a concentrate stream from a demineralization water treatment plant to the lake. Consider possible water supply treatment facility discharges to the lake. We would be interested to cooperate as a partner in developing standards.*

The Planning Team will include a section on public water supply. Monitoring results will help determine if DNR will consider recommending changes to the wording in the narrative standard for discharges to the lake. We recommend that you work directly with DWQ on this issue.



*8. We recommend that numerical standards for discharges directly entering the lake and tributaries to the lake. The standards for discharges should include Kennecott and the oil refineries.*

All dischargers have numeric effluent limitations, rigorous monitoring requirements and a regulatory net to ensure compliance. According to DWQ, numerical standards would allow less flexibility in ensuring water quality protection. The cost and complications associated with attempting to develop numerical standards for a saline lake would first require a clearly identified problem.

EPA has approved DWQ's narrative standards for the lake. Kennecott Utah Copper and oil refineries have specific discharge limits and enforcement measures.

*9. No private entity should be able to use cost considerations as a sufficient reason to justify permitting a polluting discharge into the lake. Freshwater habitats are very important in a saline lake environment and wetlands are limited in their ability to effectively utilize and remove these nutrients. We recommend that sewage effluent should not be allowed to enter the lake or adjacent wetlands prior to pre-treatment to reduce nitrogen and phosphorus levels.*

Dischargers are required to apply for a permit with the requirements mentioned above in #8. Freshwater habitats are very important in a saline environment and wetlands have limited ability to effectively utilize and remove these nutrients. This is why DNR is recommending additional research and

study to evaluate if a problem exists. DWQ has stated that significant cost implications are involved (public and industry) in ensuring the highest level of scientific information as a defensible basis to require nitrogen and phosphorous reduction/removal prior to discharging sewage effluent into the lake. A problem must be scientifically identified before nitrogen and phosphorous removal will be considered by DWQ.

*10. We recommend collecting baseline data, monitoring water quality and discharges and working with industries and communities to eliminate discharge of pollutants and prevent future costly cleanup efforts. Agencies and researchers with relevant expertise should be involved in the development and review of numerical criteria, collecting baseline and monitoring water quality and discharges.*

Baseline data collection, rigorous monitoring and measures to ensure compliance are required for instream and lake dischargers. If or when the state decides that numerical criteria are needed due to an identified problem, agencies and researchers with relevant experience will be involved.

*11. If financial support for development of numerical criteria is obtained from sources of contaminants, the process could be compromised.*

Industry will participate along with other interested stakeholders. Also see response #2.

*12. The plan does not adequately explain or justify the failure to establish numeric water quality criteria for GSL. It is not appropriate or lawful to justify*

*this decision on the relative difficulty of establishing numeric criteria for saline as opposed to freshwater systems. The Clean Water Act and EPA regulations require that states to adopt “water quality criteria sufficient to protect the designated uses.” The question is not whether numeric criteria is difficult or costly, but whether criteria are necessary to protect lake uses and that they are scientifically possible.*

See #8 and #9. Since EPA has approved the narrative standard for the lake discharges, it is a legal level of protection. DWQ has added beneficial uses to the description of GSL Class 5 narrative to protect those designated uses. Based on monitoring results, DNR will consider beneficial uses if revisions are submitted on the narrative standards for discharges to the lake. DWQ believes that the narrative standard will protect lake uses. A good narrative standard will allow negotiations on a case-by-case basis and is a better way to ensure protection.

*13. Numeric water quality criteria are necessary to protect the lake and the development of criteria is scientifically possible.*

See response #8, 9,10,12. There is no reason at this time to disagree with DWQ, however GSL water quality monitoring may lead to a different conclusion.

### **Issue 3.2 Wetland policy**

#### ***Reasons supporting the preferred alternative***

- GSL wetlands are among the most critical in Utah and carry significant international importance for millions of migrating birds

- We are encouraged that DNR is considering establishment of policy that goes beyond the COE requirements.

#### ***Reasons opposing the preferred alternative.***

- What benefit will alternative A bring to the state? Such a suggestion will only encumber lake management that already is somewhat a maze of various agencies.

- 1. Mitigation guidelines should encourage preservation of existing wetlands and deter mitigation as a politically expedient salve for over-development.*
- 2. If GSL wetlands are destroyed mitigation must take place on GSL wetlands, otherwise there is a net loss of critical acreage.*
- 3. A framework for wetland policy should include added measures of protection and the negative effects of mosquito abatement.*

DNR agrees that avoidance is preferable to mitigation and that mosquito abatement has potential adverse effects. Depending on the nature and extent of mitigation, it is possible that tradeoffs can be substantially in favor of overall conservation of the GSL wetland system. All of this will be addressed in the policy, a draft of which will be submitted to RDCC for review and comment.

- 4. DNR should develop a lakewide wetlands plan. It could include an evaluation of wetland resources based on the premise of no additional loss of wetlands and also focus on the potential for restoration and the establishment of goals and target conditions.*
- 5. A state GSL wetland management plan would be a component of a broader standard-setting effort.*

Wetland conservation needs will be assessed through DNR's critical lands determinations. Other entities' efforts are proceeding including wetland conservation plans for Davis County, Box Elder County, and Utah Reclamation Mitigation and Conservation Commission planning.

#### **Issue 4.1 Air Quality**

##### ***Reasons supporting the preferred alternative***

- DNR needs to take a more proactive role in air quality issues.

##### ***Reasons opposing preferred alternative.***

- I see nothing in the plan which does anything to reduce the horrendous amounts of pollution, especially chlorine, put out by Magcorp.
- DNR should leave DEQ to do its job in relation to air quality. The lake has no real air quality issues.

##### ***1. As a health and visibility concern, smog should be studied.***

DAQ has studied smog and other aspects of air quality for over 30 years. Regional efforts are underway for visibility concerns. National air quality standards are based on human health. There is a considerable level of protection figured into these standards and should simultaneously address wildlife health impacts from an air quality perspective (not a food chain perspective).

DAQ has operated monitoring stations at Magna since 1969 and on the south shore beach since 1981. In 1995, 363 days out of 365 days SO<sub>2</sub> concentrations were less than 0.04 ppm at Grantsville. A similar level of pollution was recorded for Grantsville over a four-year period. The beach monitoring station was

relocated due to 1983-84 flood to a location south of the freeway overpass near 2100 south. In response to public comments and pollution incident reports DAQ relocated the monitoring station to GSL Marina (GSLM) three years ago. There has been only one notable accidental release from ruptured duct pipes at KUC. DAQ believes that episodic downwash conditions from the Oquirrh Mountains might contribute to air quality near GSL. DAQ has used a three-hour SO<sub>2</sub> monitoring standard to address this issue. EPA is currently investigating a five-minute standard for SO<sub>2</sub> monitoring standard to address this issue. DAQ will continue ongoing monitoring efforts and coordination with DNR. DAQ has considered installing an additional monitoring station pending DNR and DPR approval on the south end of AISP when it becomes a little more developed. This would require an MOU. DAQ also suggested signs located at AISP and GSLM to provide a point of contact for air pollution incident reporting when air quality is poor. DAQ suggested that DPR could also help identify conditions that contribute to the problem by logging weather and air pollution information.

*2. Some suggest implications that air emissions from Magcorp are affecting GSL. This information is not supported by data and their inclusion in this proposal are biased and unnecessary. The data used to describe Magcorp's emissions is over ten years old and ignores eleven years of substantial progress.*

Magcorp has significantly reduced chlorine emissions over the last ten years and has submitted a notice of intent to install new technology which is expected to reduce emissions by over 95 percent

by 2003. An approval order would include monitoring requirements to document reductions and permit compliance. There has been a complete and thorough regulatory net to protect air quality and to dramatically reduce emissions. Stack testing, monitoring stations, health studies, dispersion studies and modeling, ozone and pollution studies have generated a massive amount of data indicating that there is no significant impact to the lake and wildlife.

*3. We believe that to uphold the public trust, DNR should take a stronger role than coordinating if the lake and associated resources such as wildlife are impacted by dioxin. Wildlife are an important resource and we would expect to be an active partner in eliminating and mitigating detrimental impacts to wildlife.*

Dioxin can cause a problem for the environment and wildlife, and DAQ is following up on these concerns. Approximately 19 months ago dioxin was identified in soil samples taken from Magcorp's wastewater ditch and ponds. Dioxin levels in GSL near the waste ponds have been found to be within background levels. Dioxin is restricted to the wastewater ditch, scrubber discharge and from the stack at levels similar to municipal incinerator levels. Under DAQ oversight, Magcorp determined the likely process sources of dioxin and investigated the possible vectors by which dioxin contamination could leave the plant. DAQ did not find any dioxin in any of Magcorp's commercial products and test data confirm that there has been no significant contamination of the lake or the species of the lake. Dioxin levels in sediments from GSL near the plant are less than 50 parts per trillion (ppt), the

generally agreed upon threshold that would require additional studies.

*4. Recently DSHW asked EPA to undertake regulation of Magcorp in the area of hazardous waste. Dioxin production and movement off site are currently being studied. I suggest that DNR establish relations with EPA, Region 8, Enforcement, Compliance and Environmental Justice.*

See comment response #3. EPA is involved in these investigations and will be meeting with DAQ throughout spring of 2000. DAQ will coordinate and update DNR on this issue.

## **Issue 5.1 Biology**

### ***Reasons supporting the preferred alternative***

- Your rationale is a wonderful paragraph. It is illustrative of the dilemmas of the lake and the conflicts inherent in its management.
- In light of overarching management objectives the emphasis on wildlife certainly is valid.

### ***Reasons opposing the preferred alternative.***

- Wildlife should be given top consideration over all other multiple uses in all management decisions.
- The preferred alternative is an unbalanced approach. Obviously wildlife is a valuable resource but it isn't the only resource worthy of consideration and protection.
- Alternative B is better because: GSL is recognized as being an internationally important resource for wildlife, especially migratory birds; this wildlife habitat resource is irreplaceable in time, space, location and magnitude; giving wildlife habitat primacy also protects and provides

the most other identified public benefits.

*1. DWR must consider all wildlife - including nongame species - in its decisions.*

DWR does consider all species of wildlife in management and planning. The GSLEP was started in July of 1996 to specifically deal with the lake from an ecosystem perspective.

*2. DWR must assert a stronger influence in management of the lake. Lakeside developers to meet strict guidelines that ensure protection of wildlife and habitat.*

DWR provides input to planning on a statewide basis through RDCC. Response is made to local governments and planning entities making recommendations to protect wildlife and habitats. The DWR has no statutory authority to regulate development but our recommendations are made to those who do.

*3. A holistic ecosystem approach should be stressed since limited species information exists.*

A holistic approach to ecosystem management is indeed very wise. Attempting to manage on component by itself rarely works. The establishment of the GSLEP seeks to utilize this philosophy.

*4. The plan downplays the importance of western and northern lake and shoreline habitats to wildlife resources. These areas can be very significant for certain species of wildlife during particular seasons and lake levels. Their importance will also increase as habitat loss, fragmentation and disturbance*

*increases along the eastern and southern shoreline. We urge that these areas not be portrayed as "second rate" or expendable.*

The north and west shorelines of the lake are important to wildlife, particularly those individual animals that occur there. Our intent is to protect wildlife and habitats wherever they occur. There is much discussion in the plan about the eastern side of the lake in relation to wildlife and habitat. The freshwater marshes there create the habitat for the millions of birds that utilize the area. Relatively, there is little habitat and use on the west and north end of the lake. However, the habitat and wildlife use that does occur is important and will receive due consideration.

*5. We believe that a wetland tracking program would be beneficial to understand wildlife needs and wetland dynamics. GSL wetlands are dynamic and dramatically change in number and size in just a few years. Fluctuating salinity, lake level and habitat types can isolate and fragment wetlands. Human impacts and development alter the amount and chemical composition of water entering into GSL wetlands. Tracking would allow us to differentiate between natural processes and human alterations and effectively evaluate habitat fragmentation and cumulative impacts. This data could be merged with wildlife use data to identify critical areas for wildlife populations.*

Tracking of changing wetlands on the periphery of GSL would indeed be a beneficial tool for management purposes. DWR has been involved in efforts to identify wetlands proximal to the lake in Davis and Box Elder counties. Efforts have been made to catalog habitat types

utilizing remote sensing technologies, DWR has been involved in some of those. The GSLEP has a waterbird study program underway that is counting birds and relating occurrence to habitats in a temporal and geographical sense. This study is slated for five years, of which three have already been completed. Future efforts in this arena will be dictated by budgets.

*6. DNR should formally designate Section 23-21-5 lands to establish WMAs, fishing water and other recreational activities in selected townships around GSL. This will help fulfill the preferred alternative 5.1.*

The DWR will actively pursue designation of lands and waters into WMAs pursuant to 23-21-5 statute. Resolution of designating candidate areas is important to facilitate the best management of lake resources. See #9 below.

*7. We are particularly concerned that priority be given to managing lands below 4217 as wetlands and wildlife habitat areas.*

Sovereign lands generally are found between elevations 4200-4210 . Many of those lands are already in existing WMAs administered by DWR. Other lands are within the boundaries of the BRMBR administered by the USFWS. Other lands belong to duck clubs and private conservation organizations such as TNC and the Layton Wetlands Preserve. DNR works with all of these entities to encourage conservation of wetlands. The COE has jurisdiction over developments that could impact wetlands; DNR works with them to provide wildlife input into their decisions. Lands above the meander line (not sovereign lands) are controlled

by the land owner and are subject to wetland regulations. The Planning Team has recommended that lands below 4217 be managed as a flood plain.

*8. We believe that entities besides the Wildlife Board should be included in decisions determining which lands and how much should be protected for wildlife. Interest groups and the general public should have the opportunity to participate in these decisions.*

Statute 23-21-5 specifically delegates the authority to the Utah Wildlife Board to determine which sovereign lands will be included in WMAs. As part of the decision making process, the Wildlife Board seeks and welcomes input from all members of the public that wish to participate and provide input.

*9. Brine fly and the effects of mosquito spraying should be critical study needs. We believe that the brine fly should be considered as an additional indicator species for the health of GSL.*

*10. County mosquito abatement activities including non-target effects of chemicals uses, methods of application that could be harmful to wetlands and nesting birds (impacts from using snow cats and ATVs as application vehicles in wetlands) should be addressed. We suggest that multi-jurisdictional agreement to establish avian and wetlands protection criteria for GSL with technical assistance from state and other wetland managing entities would be the best mechanism to address mosquito abatement concerns.*

Mosquito abatement activities will be reviewed when DNR develops a wetland policy, which is an action item identified in this plan. Brine shrimp were selected as an indicator species because of the

body of scientific literature available concerning their biology. These research findings can be used now to help evaluate brine shrimp populations in the lake. Relatively, very little research is available on brine flies.

*11. The concerns for disease in the brine shrimp are realistic. All types of confined cultivation of animals and plants are accompanied by disease caused by crowding, confinement and unnatural conditions. It would be wise to include requirements that any new industry or utilization of existing modifications demonstrate lack of adverse effects to the lake ecosystems. Industry should bare the burden of proof.*

*12. The introduction of exotics species of brine shrimp could have serious negative impacts. There is an explosion of knowledge currently about damage done to ecosystems by the introduction intentional or otherwise of exotics. It would be impossible to isolate exotics in evaporation ponds and once released the negative impacts would be impossible to undo.*

Concerns about diseases of brine shrimp are realistic and the potential impacts could be catastrophic. DWR will work with others to consider how these problems can be avoided.

Introduction of a non-native species of brine shrimp into GSL also has the possibility of being catastrophic. There is a wealth of history concerning non-native species introductions around the world that have caused great harm to ecosystems and tremendous negative economic impacts. When disease problems are being considered, non-native species introductions will also be addressed.

*13. More research and monitoring are needed to achieve alternative A.*

More research and monitoring indeed will be needed in the future to understand and properly manage and conserve the lake. The Planning Team has identified monitoring needs and is pursuing funding to begin those activities. The DWR GSLEP is currently funding research on the lake and more will be done in the future to provide answers that will foster conservation.

*14. This alternative only is presented and pertains only to management of WMAs.*

*15. Alternatives should take into consideration other private lands and water bodies that are a part of GSL ecosystem to ensure that the broader ecosystem is included.*

Considering all wetland habitat types around the lake in a comprehensive ecosystem plan would be practically beneficial. However, the plan is written to guide management only on those lands directly under DNR jurisdiction (sovereign lands, state parks, marinas and WMAs).

*16. The connotation on page 85 is that natural lake level fluctuations are undesirable. We would like to see WMA management plans welcome lake level fluctuations as part of the variability of the lake. Other wildlife habitat areas are designed in anticipation of high water levels to replenish pond saline water chemistries and reduce monotypic Phragmites marshes.*

Water level fluctuations in the lake can be beneficial and detrimental, dependent upon the objectives of the lands being managed and the duration of time being considered. At Farmington Bay WMA, certain lake levels have the capability of destroying dikes and freshwater marshes that are created by them. Impacts to freshwater marsh dependent wildlife are real and substantial. However, salt water inundation is beneficial by controlling undesirable vegetation in these units. That benefit is realized over a longer period of time. Management response to lake level variations depend upon different circumstances.

## **Issue 6.1 Sovereign land classifications**

### ***Reasons opposing the preferred alternative***

- Alternative B is better. The viewshed and open water bird use west of AISP must be protected.
- With some modifications alternative B is better. It provides the most protection for the most sensitive habitat areas thereby helping assure a sustainable, healthy ecosystem.
- To designate all of the 39 townships as wildlife habitat is too broad and may adversely affect other reasonable needs and projects.

*1. We believe that sovereign land classifications for Class 5 and 6 are contradictory. Class 5 pertains to numerous lands including WMAs and does not allow oil and gas (O&G) exploration with surface occupancy. Class 6 is specifically for WMAs and allows O&G leasing without surface occupancy (exploration as well?). Class 6 appears to be redundant.*

There is no contradiction. Pages 114-115 of the Draft CMP reference the 1995

plan classifications which, as mentioned on page 115, have been superseded by the MLP with respect to minerals. In alternative A, existing WMAs are Class 6 with no new mineral leasing.

*2. We support the formal designation of 23-21-5 townships as state WMAs since much of the remaining critically important wetlands on sovereign land are not already under WMA management.*

WMA designation is a decision to be made by the Wildlife Board. In the interim, Class 5 designation in alternative A generally protects the WMA suitability of all 23-21-5 lands except the Saltair-to-Black Rock area and existing mineral leases.

*3. Bird (Hat) Island is already managed by DWR as a gull and heron rookery with restricted public access. The most appropriate classification may be Class 6.*

Class 5 is more appropriate until a WMA is formally designated for the island.

*4. The south shore area between old Saltair and the Goggin Drain is important habitat for sensitive species such as snowy plover, long-billed curlew and short-eared owl and for wading shorebirds. DFFSL should strongly consider only compatible and appropriate uses for this area such as educational, interpretive and protection of the area's scenic quality and natural values.*

Agreed. This consideration is consistent with the Class 5 designation.

*5. We think that Rozel Point and Black Mountain should be designated as Class*



*4 until a thorough evaluation of natural values and compatible uses is conducted.*

Existing developments at Rozel Point and Black Mountain have occurred with apparently no significant impacts. If some inventory and analysis work associated with other planning efforts or independent studies leads to a different conclusion, the Class 2 designation can be modified.

*6. It is unclear why alternative B recommends a new Class 5 boundary west of Antelope Island. Because it is an important vista from many public areas on Antelope Island it is appropriate that visual resources on the west side of Antelope Island be considered in the CMP and in the AISP Management Plan.*

It is agreed that the vista west of AISP is important. A VRM plan may identify the need to change classification. Pending completion of the plan impacts to the vista will be considered under the Class 3 designation.

### **Issue 6.2 Geologic hazards**

Public comments supported the preferred alternative.

### **Issue 6.3 BRMBR expansion**

*Reasons supporting the preferred alternative*

- The state should not give up land to the federal government.

*Reasons opposing the preferred alternative.*

- Decisions on whether new sovereign lands would be made available should not hinge on whether those lands will be open to hunting.
- The management goals of BRMBR seem to be compatible with sovereign land management.

- 1. Some new acquisitions may not be appropriate for hunting, however, hunting should remain one of the top recreational priorities for the refuge.*
- 2. We assert federal ownership to all lands acquired in the expansion of BRMBR as well as to all lands within the old refuge boundary. All refuge lands will be managed in accordance with federal law.*

This is a subject of litigation.

- 3. BRMBR management goals are compatible with sound management of sovereign lands. Management conflicts can be avoided if managers from the affected agencies work together cooperatively. The plan should not interfere with the flexibility of wetland management practices.*
- 4. We support the expansion without conditions, but we do not believe that this general planning document is the appropriate vehicle to resolve this issue.*

It is agreed that refuge management goals can be compatible with sovereign land management. Where there are sovereign lands in the refuge it is entirely appropriate that DFFSL as trustee, and DWR, as the state wildlife authority, participate in resource management. Resolution of ownership questions will not be completed by the time the CMP is finalized.

### **Issue 6.4 Diking policy**

*Reasons opposing the preferred alternative.*

- Diking would require a much broader assessment than is already required by the COE and would add additional unnecessary burdens.

***Reasons supporting the preferred alternative.***

- We recommend that diking proposals that negatively impact wildlife, habitat, lake level, water quality, salinity or navigation be prohibited. We support the requirement for a cumulative impact assessment for each diking proposal.

- 1. The plan should identify lake dynamics and ecosystem health as primary targets and repeat the environmental reasons to deny any additional diking proposals.*
- 2. We consider lake dynamics and ecosystem health to be a primary management target and additional dikes should not be considered.*
- 3. We are opposed to additional diking proposals and believe that if additional ponds were proposed that the sponsor must understand that the state will not attempt to protect these infrastructure investments in case of flooding or other natural circumstances.*

The general effect of dikes on lake dynamics is acknowledged. The policy will require a more specific assessment. Blanket denial of diking proposals is not appropriate because it would preclude construction of dikes in WMAs, the sovereign land portion of BRMBR, and existing mineral leases. Diking proposals in these areas will be subject to the policy. Sponsors of proposals will be aware that nothing other than implementing WDPP policy will serve as any measure of protection from high water levels.

- 4. DNR should consider developing a plan for the removal of dikes on GSL including the railroad causeway.*
- 5. We would like to see any further hardening of the shoreline avoided and*

*a stronger focus on restoration of areas isolated by existing dike structures.*

This has been considered. All dikes have been constructed under valid land use authority. Unless the land use authorities are determined to be inconsistent with the Public Trust Doctrine, they will remain valid.

***Issue 7.1 Mineral lease zones  
Reasons supporting the preferred alternative***

- Drilling for O&G as in existing solar ponds would be non-compatible with mineral extraction uses.
- In addition to West Rozel prospects suggest that there are additional possible areas for O&G exploration.
- It appears that you have made these areas available.

***Reasons opposing the preferred alternative***

- Alternative B is better. No new mineral extraction ponds should be permitted on sovereign land.
- The future is bright for gas and imported oil products, but bleak for inland domestic oil refineries and exploration. Drilling is the ultimate test of geologic theory.

- 1. The 1996 MLP creates an untested bureaucracy and some rules that duplicate federal and state authorities.*

For the past 90+ years DFFSL or its predecessors as landholder and trustee has had the responsibility of mineral leasing on sovereign lands. DFFSL rules provide a planning process for sovereign lands including the mineral resources of GSL. The current guideline governing this management responsibility is the 1996 MLP, which was prepared through a public review and comment process. The MLP did not create a new

bureaucracy, but rather set up parameters for identifying special concerns, determining lease stipulations in response to those concerns, and making the stipulations known at the time the lease is offered for competitive bid. The MLP was implemented to update and clarify goals and strategies for managing mineral resources on sovereign lands. Special emphasis was provided in the MLP for protecting important GSL recreational and wildlife sites. The policies of the MLP have been successful in this regard, as acreage under lease in important wildlife areas has been reduced.

*2. The abandoned Rozel Point and Farmington Bay oil fields should be recognized as significant historical sites.*

The MLP recommends working with mineral lessees to provide interpretive sites of mineral development. With regard to Rozel Point, the historical interest is understood. However, there are no physical remains of historical vintage. Nonetheless, there is nothing in the CMP that will change the character of the properties and the eventual development of an interpretive display at Rozel Point is contemplated under alternative A.

## **Issue 7.2 Mineral lease policies**

### *Reasons opposing the preferred alternative*

- Extraction industries should be regulated to maintain a balance between extraction and what is being brought into the system.
- Wildlife and recreation protection should be paramount in mineral leases.
- The state has already done some work at Rozel point. The remaining debris should be inventoried, mapped and, if possible, removed.

- Alternative B is a more proactive approach to maintaining a healthy GSL.

- 1. The middle and the west sides of the lake have important wildlife, recreational, aesthetic and other values. These values should be recognized and considered. Contamination could occur with flooding of oil wells and ponds as the lake rises. We recommend that DNR revisit MLP zones with additional public input to evaluate zone designation, stipulations for each zone and remediation and mitigation requirements to ascertain whether they are sufficiently protective of the GSL ecosystem.*
- 2. No revisions should be made to the MLP without public involvement.*

A part of this CMP process for GSL is to revisit the MLP to ensure that its objectives are consistent with the CMP. There has been nothing to suggest that measures protecting wildlife, aesthetic, recreational, and other values were insufficient. In part this is due to the special lease stipulations contained in the MLP related to wildlife protection or public access for areas such as Gunnison Island, around Locomotive Springs and along shore areas. Further, the MLP also stipulates provisions for navigability, reclamation and bonding, cultural and biological surveys, and liability and monitoring clauses in all new or readjusted leases. In the event of a review of lease offerings or amendment of the MLP, DFFSL welcomes comments and encourages interested persons to participate. Two processes exist in which the public can provide input. The first and most immediate is the current GSL CMP. The other is through the RDCC, which is the state clearinghouse for all proposed state actions relating to natural resources.

*3. We suggest that the Planning Team modify alternatives A and B to more closely resemble the MLP.*

*4. We recommend alternative B to clean up oil filed debris on state and private land at Rozel Point and include wildlife and recreation protection stipulations in leases. Habitat areas in the north arm should not be undervalued.*

Alternative A represents continued implementation of the MLP. Alternative B differs from alternative A only in that additional wildlife stipulations and cleanup of debris at Rozel Point are emphasized. Cleanup of Rozel Point was included in the most recent lease offering, but lease negotiations failed. No evidence has been offered that wildlife and recreation protection stipulations in lease offerings should be improved, or that the process through which DFFSL identifies stipulations is inadequate.

*5. I recommend that the state leasing agency be given maximum flexibility in regards to leasing for O&G development. Consideration should be given to planned exploration and production activities on an incremental time basis. This would allow companies with a specific plan to proceed in contrast to a five- or ten-year lease that does not require any activity and it would allow for a provision to extend the leases to allow for orderly development.*

In regard to the state's ability to make areas available for leasing, two options provide flexibility. First, Subsection 65A-10-8(f) encourages the availability of **appropriate** areas for O&G leasing under standard or special stipulations. If the development of O&G on sovereign lands leads to the conclusion that the areas open for development should be changed, plan amendment processes are

in place and will be followed. Second, the MLP provides for withdrawing lands from mineral leasing until applicants express an interest in an area. That tract can then be fully evaluated by DFFSL as to size, appropriate stipulations and all other terms before offering the tract in a competitive bid process. This gives DFFSL maximum flexibility to consider many leasing options, while safeguarding other lake resources.

*6. Optimal biological productivity should be used as a management target and should determine this management considerations.*

For now, wildlife stipulations in lease offerings combined with the CMP selected alternative for issue 5.1 protect biological productivity. In accordance with the MLP, DFFSL has consulted with other natural resource agencies to provide appropriate stipulations in tracts offered for lease or to exchange lands under lease for other less sensitive lands. The MLP also recommends better monitoring, establishment of bonding and reclamation standards, participating in planning initiatives such as a state wetlands policy and working with mineral lessees in data collection on brine movements, deposition of salts and return of salts to the lake system.

### **Issue 8.1 Water recreation opportunities**

*Reasons supporting the preferred alternative.*

- Whoever proposed alternative B cannot understand the scope and conditions of some WMAs. This would mean that the only human users of parts of this public resource would be adjacent landowners.

*1. I support waterfowl hunters being able to use motorized boats for hunting, but I recommend motor size limitations similar to regulations governing Ruby Lake NWR in Nevada where motors must not exceed 10 horsepower (hp).*

Boating law would have to be changed. Currently there are no motor restrictions in Utah Boating Laws for GSL. The process would be to propose this change to the Boating Advisory Council to designate GSL as a “Zoned Water” with restrictions for horsepower and other motor restrictions. At this time, existing law is adequate.

*2. We recommend that motor size be limited and that a no wake rule be implemented in WMAs. Use of air boats should be prohibited in sensitive bird nesting areas from May through August, especially in the Willard Spur of Bear River Bay.*

State WMAs have air boat restrictions during May-August and posted trespass restrictions to avoid bird nesting impacts. There is a possibility that this area and others may become administered by DWR as WMAs. For the time being, the rest of the lake and Willard Spur of Bear River Bay see comment response #1 regarding air boat and motor restrictions. WMA restrictions would have to go through DWR.

*3. We recommend a thorough analysis of recreational demands on GSL with no permitting of additional recreational facilities until a more thorough recreational plan can be developed.*

*4. Determining the level, types of use, impacts, monitoring, infrastructure, future demands and other concerns is necessary to determine if recreational activities will not impair GSL ecosystem.*

*What is the time frame for this effort (recreation analysis)? The scope should be broader.*

This type of analysis is proposed in the monitoring plan under Recreation and Tourism - Land and Water on page 254. We also recognize this should be implemented before other recreation facilities are developed. Time frame will be determined by funding.

## **Issue 8.2 Navigability**

### ***Reasons supporting the preferred alternative***

- Navigation in the north arm should be restricted to commercial, rescue and bird sanctuary operations because bird nesting areas on Gunnison Island are accessible from deep water, exceptional large shallow areas could present navigational hazards, cold weather formation of Glaubers Salt creates a thick layer of slush dense enough to hold fast a boat, and cooling water intakes on boats tend to crystallize over with salt, thus shutting down engine cooling systems.

### ***Reasons opposing the preferred alternative.***

- Alternative B is better. In keeping with the objectives of 1.2 and minimizing the salinity difference, more recreational boating and commercial water craft should be able to navigate between the two arms.
- Alternative C is better. The existing breach is very restrictive in terms of vessels that are able to travel between arms.
- Ultimately it would be in everyone’s best interest to have better access to the north arm. Navigation is critical to safety, search and rescue, research, commercial activity and recreation.

- The majority of marine traffic is recreational sailing and brine shrimping. Since the 1950s neither group has been able to navigate between arms. The preferred alternative does not change this.
- It is not a navigable solution but rather an expensive proposal to provide access to another lake known as the north arm by duplicating facilities, staff and expense.

*1. An alternative to deepening the breach could be a narrower but eight-foot-deep second breach at the other end of the causeway.*

*2. A 300-foot wide breach with a sill elevation of 4196 on the east end of the causeway with a five-foot rise to the center structure and a five-foot lower sill at the center would allow navigation to the north arm 80 percent of the time for commercial, search and rescue and administrative purposes.*

Although breaching the east side of the causeway near Saline will provide an additional point of navigational access to the north arm of GSL, it will not significantly improve access for larger boats than that already available through the Lakeside breach. The head differential between the north and south arm will cause substantial currents upon breach of the causeway which will damage or destroy adjacent underwater canals and pumping facilities. Further, the cost to breach the causeway and keep a navigable channel through the breach clear of debris and fill material will be substantial. The associated costs of an east side breach weighed against the limited navigational benefits make the concept economically undesirable.

*3. The causeway has restricted navigation. Ultimately, it would be in*

*everyone's best interest to have better access ability to the north arm of the lake.*

*4. Navigation is critical to safety, search and rescue, research and data collection, monitoring, commercial activity and recreation.*

Limited recreational and commercial boating access into the north arm of GSL is available through the northern railroad causeway breach near Lakeside, Utah. At current lake levels, navigational access is open to vessels under 25 feet in width, 15 feet in height above the water's surface, drawing less than five feet of water. Although the northern causeway breach acts to restrict, through size limitations, the number of vessels capable of navigating into the north arm, sensitive ecological interests are buffered by the reduced access. The small islands located in the north arm of the lake provide critical habitat and nesting grounds for American white pelicans and other shorebirds. Gunnison Island hosts one of the three largest nesting colonies of American white pelicans in the North American continent. The pelicans and other shorebirds rely heavily upon the habitat provided on these isolated islands during annual migrations, and significant human presence has shown to disrupt them to the point that they move off the island to less productive habitat.

Despite the shorebird disruption concerns associated with the increased boating traffic in the north arm, the GSL Draft CMP presents alternatives for increased boating access in the north arm. The plan advanced three possible alternatives with respect to navigability on GSL. The preferred is viable and economically feasible to continue with the status quo which allows limited navigation through the existing breach. The plan further presents an additional

alternative to enhance navigation on the lake through developing marinas and boat ramps in the north arm (See rationale for Section 8.1 and 8.2).

Any effort to breach the northern railroad causeway to facilitate full navigational access from the south arm to the north arm and vice versa will be very costly whether the state bears the cost of the breach or attempts to legally compel the railroad to bear the cost. Full navigational access through the causeway can be accomplished in one of two ways: 1) breach the causeway and construct a bridge that will accommodate high vessel passage; or 2) breach the causeway and abandon railroad traffic across it.

Any breach in the causeway designed to fully accommodate navigational access to the north arm without disrupting railroad traffic will need to occur in water depths sufficient for deep keel boat passage. The bridge system spanning the breach must not only allow railroad traffic across the causeway, but also have sufficient height or mobility to allow passage of sailboats with tall masts. The geology of the lake bed in the deeper waters is such that engineering and constructing such a bridge will be extremely expensive, if not impossible. The second scenario for full navigational access to the north arm from the south arm circumvents the geological and engineering impediments associated with constructing a bridge, but requires the railroad to abandon the causeway and re-route the displaced train traffic. This alternative is obviously very damaging and costly to the railroad and those who use rail transport.

In light of the leases held by the railroad for the northern causeway, it is highly unlikely the railroad will voluntarily bear

the cost associated with building a bridge or abandoning the causeway. While brine shrimp harvesting companies and mineral extraction operations in the south arm of the lake would likely support breaches in the northern causeway in anticipation of the resulting higher salinity levels in the south arm, mineral extraction companies in the north arm and the railroad would vigorously oppose it. The north arm mineral extraction operations currently enjoy near saturation salinity levels in the water which makes evaporative extraction processes very productive. Breaches in the causeway would reduce salinity levels, resulting in decreased mineral extraction productivity in the north arm. Some of these operations have also invested significant amounts of money in lake bed canal systems designed to channel dense brine solution to locations where the brine can be pumped into evaporation impoundments. The head differential between the north and south arms will create strong currents when the causeway is breached which may damage or destroy these lake bed canal systems. This very problem was experienced in 1984 when 300 feet of causeway was breached immediately east of Lakeside, Utah. The State of Utah was subsequently sued in court and required to compensate the canal owner for the damages that resulted from the water currents generated by the breach.

Unfortunately, there is no easy solution to the navigation restrictions imposed by the northern causeway. The management plan attempts to identify the key alternatives that may address these navigation issues and identifies a preferred alternative.

*5. The highest priority for navigation on the lake is to pursue an alternative that would allow increased or unlimited*

*access/navigation through the causeway that is currently a significant barrier to navigation between the north and south arms of the lake.*

See comment responses #3,4 and #6,7.

*6. Dikes impede navigation and we recommend that DNR should actively remove major dikes impeding navigation. With increased navigation a plan would need to be in place to protect nesting islands in the north arm.*

*7. The state acquired sovereign rights to GSL because the lake is a navigable body of water. Then the railroad was allowed to construct a solid fill causeway that completely eliminated navigation between the north and south arms of the lake. Alternative A should recommend that navigability is the solution to north arm access by the brine shrimp industry and recreational boating. The notion that the north arm is protected by virtue of the causeway is contradictory.*

Removal of dikes and causeways on GSL has been considered. However, all dikes and causeways on the lake have been constructed and are maintained under valid land use authority. Unless the land use authorities are determined to be inconsistent with the Public Trust Doctrine, they will remain valid. DNR acknowledges the potential for disturbance of bird activity on islands in the north arm. Depending on the volume of increased north arm boating and the locations from which the boating originates, increased educational and enforcement measures will be appropriate.

## **Issue 9.1 OHV**

***Reasons supporting the preferred alternative.***

- OHV and auto access is necessary for selected areas.
- OHV use in tightly-controlled designated areas is supportable. OHV trespass is a problem.

***Reasons opposing the preferred alternative.***

- Sovereign lands in and around GSL should be managed with wildlife and habitat diversity as the primary objectives— this is incompatible with OHV use.
- The area between Locomotive Springs and Crocodile Mountain has several springs which are used by snowy plovers which may be nesting on these mudflats. The area should not be open to OHV use, or should at least include seasonal restrictions.
- OHVs disrupt foraging birds, impact nesting success, rut and compact soils thereby affecting insect resources, destroy native vegetation and encourage weeds. Monitoring the destruction that would occur is inadequate.
- OHVs disturb and destroy habitat, watershed and wildlife.

*1. OHVs should be used only as an extension of auto access.*

*2. OHV size limits should be imposed and specific trails should be designated, and no off trail use allowed.*

*3. The state should make efforts to accommodate OHV use elsewhere in the state.*

*4. The area between Locomotive Springs and Crocodile Mountain has several springs which are used by snowy plovers and it is likely the species may be nesting on these mudflats. This area should not be open to OHV use or at least include seasonal restrictions.*



*5. Both existing and proposed OHV use of sovereign lands should be evaluated with respect to avoiding unacceptable impacts to special habitats. The remote character of most lakeshore areas makes rule enforcement difficult. OHV use should continue to be restricted except in cases where enforcement is available and where access to special habitats from OHV permitted areas is difficult or impossible due to terrain or other natural constraints. We are especially concerned about snowy plover habitat.*

These comments are addressed in the rationale for 9.1 on page 20.

*6. OHV use is too disruptive to the wildlife resources. Monitoring the destruction that would occur with OHV use is inadequate.*

*7. OHV negatively impacts birds and habitat such as the snowy plover especially at Monument Rock and on the south shore. It disrupts foraging, impact reproductive success, compacts and ruts soils - affecting insects, native vegetation and encourages weedy species.*

Recreation on sovereign land is a legitimate public use. The selected alternative is not an irretrievable or irreversible commitment of trust resources. If monitoring and enforcement lead to the conclusion that OHV use in this limited area is resulting in unacceptable damage to wildlife habitat, the designation can be changed.

*8. We support restricted OHV access on sovereign lands except in tightly controlled designated areas. There is extensive OHV use along the south shore between the old railroad jetty east to Lee Creek. It does not appear that the law prohibiting OHV use on sovereign lands*

*has been enforced in this area and it encourages trespass on private lands. We have fenced all sides of our property except on sovereign lands due to the ambiguity of the meander line, to protect the aesthetic view and to provide uninterrupted wildlife corridors from GSL. OHV use destroys ground nests, disturbs migratory birds and has resulted in poaching.*

The sovereign lands in this area are Class 5. When DWR and DFFSL decide which division will be responsible for managing certain activities, the need for additional law enforcement will be considered.

Right now it appears that OHV trespass on sovereign land originates on private land and vice versa. Private landowners must do their share of enforcement too.

## **Issue 9.2 Recreation opportunity and access**

### ***Reasons supporting preferred alternative.***

- I have a health condition that limits my movement. I have access to the shores for hunting and Willard Bay for fishing. Anything done to improve the lake should not damage these and other opportunities.
- The south shore is the closest spot to the largest number of hotel/motel visitor rooms in the state.
- The north end of Stansbury Island provides an unparalleled vista of the lake. The rocky point with the sandy bar behind it provides a fine vantage point.
- Magcorp affirms the reference to potential day use on Magcorp property on the north end of Stansbury Island.
- Access from the north into the North Range of Utah Test and Training Range (UTTR) would be a major problem and should not be

encouraged by improving access across the railroad right-of-way.

***Reasons opposing the preferred alternative.***

- Alternative B is better but with a gravel rather than paved road.
- A road around GSL would provide an opportunity to experience, learn, participate and enjoy the lake's habitats and wildlife. This is an important public benefit that will lead to better understanding of unique natural attributes.
- Given the inability of private landowners, the Tooele County Sheriff and the BLM to control and manage public uses, any effort to increase access without a detailed plan to protect private property owners will lead to more abuse of private lands.

*1. The concept of improved visitor facilities at south shore is as valid today as when originally proposed by Friends of the South Shore.*

Agreed. DNR will respond to an application for this.

*2. Hunting and bird watching at mid-zone 3 lake elevations leave up to 600 square miles of flats and shoals too shallow to navigate, thus requiring several miles of wading/walking to reach observation points. Buoys do not do well on the lake; pole markers could be used in conjunction with lake charts to indicate the best approaches to recommended observation points.*

Point well taken.

*3. Walking or cycling into sites must be maintained. Trails into sites will maintain/preserve the pristine and delicate landscape.*

Agreed. Well planned recreation corridors will allow access and minimize impacts.

*4. Recognize that some of the proposed sites and access may impact BLM managed lands and coordinate with BLM on future proposals.*

Agreed. Coordination will take place before any changes are finalized.

*5. Any recreation plan for the lake should include a major education component.*

Education will be considered. See the Recreation and Tourism - Land and Water section of the Draft CMP on pages 129-146. This should be implemented before other recreation facilities are developed. However recreation planning, implementation and time frames will be determined by available funding.

**Issue 9.3 Education and interpretation**

Comments supported the preferred alternative.

**Issue 9.4 Hunting conflicts**  
***Reasons supporting the preferred alternative.***

- The no hunting zone at AISP is critical to avoid a possible injury situation.
- It addresses a public safety concern.

*1. DWR should manage AISP for non-consumptive wildlife use.*

DPR manages AISP. Virtually all of the activities in the park are geared toward non-consumptive use of watchable wildlife. There is a 100-yard waterfowl hunting buffer (no hunting) from the

Fielding Garr Ranch north and around the island to Elephant Head. The purpose of this closure is for safety and to eliminate interference with non-consumptive use of wildlife.

*2. We recommend two major tourist interpretive sites: 1. The proposed visitors center at the BRMBR; and 2. A site to the west of SLC near the lake off I-80.*

Agreed. Other interpretive sites, probably much less developed, will be pursued as opportunities allow.

*3. The state should recommend that some sovereign lands inside WMAs could remain closed to hunting at the manager's discretion to provide rest areas for waterfowl.*

There are lands inside of existing WMAs that are already closed to waterfowl hunting. This determination was made under the manager direction. These areas provide resting areas for waterfowl and are used as wildlife viewing areas.

*4. We agree to limit hunting where public safety is a concern. We altered our water control regime (did not fill ponds near GSL) so hunters would not be tempted to trespass and poach on our property as they did in 1997-98.*

Comment noted.

## **Issue 10.1 Commercial and industrial use**

*Reasons opposing the preferred alternative.*

- I prefer alternative B. Wildlife and habitat should be given top consideration over all other multiple-uses.

- Alternative B is most consistent with public trust responsibilities and the goal of a sustainable GSL ecosystem.
- The case-by-case evaluation based on a goal of balancing multiple-uses in alternative A is not consistent with the Public Trust Doctrine and may result in unacceptable risks and impacts to unique and important natural values.
- The 1995 plan recommendations are better. Changes should be based on optimizing biological productivity.

*1. We do not believe that a case-by-case evaluation based on a goal of balancing multiple-uses as proposed in alternative A is consistent with the Public Trust Doctrine and may result in unacceptable risks and impacts to the unique and important natural values of GSL. What criteria will be used, how will public input be considered and when changing existing sovereign land classifications.*

*2. The plan lacks specific goals, procedures and guidance for implementation for alternative A. It is too general to provide future decision makers with direction as how commercial and industry uses should be regulated.*

The approach to adjusting classifications is explained in the rationale for 10.1 on page 21. Please note that the offset will be based on factors including acreage, function and public trust value. The Public Trust Doctrine should remain flexible to respond to changing public needs. A case-by-case evaluation is appropriate. The relationship of multiple use to the Public Trust Doctrine is stated on page 1 of the Draft CMP. Procedures for proposing changes to the classifications (plan amendments) are in rules promulgated by DFFSL, and require RDCC review.

## Issue 10.2 Brine shrimp harbors

### *Reasons supporting the preferred alternative.*

- In order to provide for facilities and minimize impacts it probably is not in the state's best interest to lease land to an individual harbor for each company.

### *Reasons opposing the preferred alternative.*

- Alternative C is better. Many companies have invested large amounts of money and time to develop harbor facilities and should not be penalized by having to open up their facilities to all brine shrimp companies.
- Since the investment to convert Antelope Island Marina has been made, to now limit availability of the marina to commercial use is a waste of that taxpayers investment.

*1. I support alternative A however there is little public access to the identified harbors. Little Valley is the best in the north arm but as yet there is no public access. Black Mountain is a very small harbor through private property. Rozel Point is not a true harbor and there are hazards in the water. Probably the best place to develop a harbor on the north arm would be on the south tip of Promontory Point near the IMC Kalium pumps.*

The sovereign land boundary through Little Valley harbor is being surveyed. Public access over the road around Promontory Point is under litigation. An assessment of the situation at the harbor will be made following litigation. Little Valley harbor is available for lease. The situation at Black Mountain will be evaluated in a record of decision for a lease application. The comment regarding Rozel Point is noted. Harbor

development near the IMC pumps is possible under the Class 2 sovereign land designation. Potential conflict with the mineral lease would have to be avoided.

*2. We oppose a non-exclusive harbor policy since the main purpose that the state was given sovereign land from the federal government was to generate revenue for the public schools.*

Wrong! Sovereign lands serve public purposes. Conveyance of an interest in sovereign land is subject to the criterion of avoiding substantial impairment of public uses. Generation of revenue is not the purpose for which the state holds the land in trust.

*3. The state should encourage public non-exclusive harbor development in those areas where the state has upland access such as Lakeside, Strongs Knob and Antelope Island Marina.*

The uplands at Lakeside and Strongs Knob are owned by SITLA and a railroad. It serves no useful purpose to lump SITLA and sovereign land together as "state" land, other than to advocate cooperation. Even then, the approach to cooperation with SITLA would be no different than with private persons.

*4. After paying a considerable sum of money to purchase commercial rights for AIM, the state should maximize the revenue generate by that marina by encouraging the brine shrimp industry to utilize this marina in October and November which coincides with limited public use.*

The primary consideration for AIM is recreation. Revenue generation is secondary.

*5. The state should utilize the original policy of allowing exclusive harbor development, but not allowing any one industry or company to monopolize the lake, to maximize potential revenue from sovereign land leasing.*

Revenue generation is addressed in #2 above. DFFSL welcomes suggestions and is willing to consider how access to the lake as a competitive factor in the brine shrimp industry can be avoided if an exclusive use policy is reinstated. One possibility that exists, and it is the practice DFFSL hopes to implement on the Magcorp dike, is to allow exclusive use of small harbor facilities constructed by individual companies as long as all companies have an opportunity to construct their own small facility in a common general location, and vehicle access across an exclusive use parcel to get to another exclusive use facility is available to all users at a given location.

*6. Brine shrimp companies have invested large amounts of money and time in order to develop harbor facilities along GSL and should not be penalized by state requirements to open these facilities to other companies.*

*7. It seems unfair to penalize companies who have spent time and money building and securing sites and locations and then to force them to open their facilities to public access.*

Exclusive use facilities constructed under a valid land use authority issued by DFFSL will not need to be made available to all users. Harbor facilities constructed in trespass, such as at the Magcorp dike, Lakeside, Rozel Point and Black Mountain will have to be made available to all users under the scenario suggested in comment response #5 above

or some other method acceptable to DFFSL.

*8. Recognize some proposed harbor sites and access may impact BLM managed lands and will require coordination with BLM on future proposals.*

Coordination will occur via the RDCC process.

*9. AIM is an excellent location for commercial access to the lake and should be maintained since it is the only significant commercial marina with public access. "Several years ago the State acquired the rights from the federal government to provide commercial access at the AIM?"*

AIM currently allows commercial mooring and access to GSL. The marina was developed primarily for recreational use. Since the slips are not fully utilized by recreational boaters commercial mooring has been allowed. Commercial launching will always be allowed.

*10. Additional opportunities for brine shrimp harbor development in both the north and south arms of the lake are critical to long-term health and viability of the brine shrimp industry.*

This can occur at locations identified in the CMP, but companies must work together under the scenario suggested in comment response #5 above or some other method acceptable to DFFSL.

*11. Limiting availability of AIM as a brine shrimp harbor would not be an "environmentally weighted alternative." Actually utilizing existing facilities to their full capacity would be superior to creating more harbors.*

AIM was developed for recreational use, since the slips are not fully utilized by recreational boaters commercial mooring and launching has been allowed. DPR also transferred property to DFFSL for the development of a commercial harbor at Black Rock.

*12. We have concerns with the proposed Black Rock Harbor (additional fill, diking, loss of shoreline habitat, visual impacts and questionable need for such a large harbor) we would like the state to reevaluate the pending permit and consider alternatives that would maximize use of existing facilities.*

*13. Other options to Black Rock proposed harbor may include maintaining the existing policy regarding non-exclusive use, allow sub-lease option to current lease holders to recoup capital investments spent in construction of their own harbors, paying back federal funds used in the construction of the GSL Marina so that commercial activities could be conducted there and reconfiguring piers at Little Valley harbor to increase capacity.*

*14. Little Valley harbor should be made available to all brine shrimp harvesters as a place to launch and recover their vessels to avoid potential dangers in crossing under the causeway through the breach.*

The lease at Black Rock has been issued. Current exclusive lease holders may convert their exclusive leases to commercial leases with approval of DFFSL. Little Valley is available for lease.

Commercial use of GSLM would be difficult to accomplish, converting (6F) Land and Water Conservation Fund (LWCF) dollars because DPR does not

have the funds required to accomplish this, but also there are no slips available.

*15. Commercial interest have incurred artificially high rental fees for use of AISP slips and unimproved docking area's to aid in the recovery of this expense (Land Conservation funds) which has paid their way and reimbursed much of the tax payers expense.*

The mooring and launching fees were established by the DPR Board and Davis County. The 6F conversion was accomplished by swapping recreation property to allow limited commercial uses at AIM. There are no artificially high rental fees because of the conversion.

*16. The draft suggests that some commercial parties have access at the expense of others, this is a false statement, there is no documentation or evidence that parties were unable to access the lake and industry has enjoyed access via AIM.*

DNR will refrain from making such inferences in the future.

*17. The state is looking towards access through private property owners for lake access and marina purposes (due to limiting AIM use) which is the most logical and economical place to provide additional access. Lakeside is not mentioned in the recreation section for access and it is a good candidate for harbor development due to state upland property ownership. Lakeside should be recommended not private lands.*

The public does not have a right to cross private land to access sovereign land, but rights of public access to sovereign land

will be pursued wherever DNR believes the rights exist. See comment response #3. AIM provides for recreational use but has allowed commercial use while industry considers other access options.

*18. It is ridiculous for the state to suggest limiting availability of AIM as a brine shrimp harbor and to infer that no commercial activities will be allowed, since commercial rights were acquired with tax payer and industry money, and additional money will be required to purchase other private properties and build additional commercial facilities to be used by the same commercial interests that have paid and operated out of AIM.*

The 6F conversion was accomplished by swapping recreation property to allow limited commercial uses at AIM. It is not at tax payer or industry expense.

*19. Using existing facilities to their full capacity would be superior to creating new harbors.*

*20. The state could designate a location such as Rozel Point as a public access harbor in the north arm and maintain AIM as a public access in the south arm.*

This is the intent of the policy regarding exclusive use, and a consideration in the identification of suitable locations. See rationale for 10.2 on page 242 of the Draft CMP.

### **Issue 10.3 Unauthorized construction policy**

*Reasons supporting the preferred alternative.*

- It is a positive step in curtailing development below the meander.

*Reasons opposing the preferred alternative.*

- It is inappropriate to link enforceable penalties to brine shrimp certificates of registration.

### **Issue 11.1 Grazing**

*Reasons supporting the preferred alternative.*

- Grazing can be used as an effective vegetation management tool but only within the context of a grazing management plan that identifies a prescribed condition that accommodates wildlife needs.

*Reasons opposing the preferred alternative.*

- No new grazing permits should be issued for sovereign lands.

*1. Existing grazing permits should be continued only if DWR can prove that the permittee's operation is not harming or changing the ecosystem. It should be up to the permittees to provide DWR with evidence of ecosystem health compliance.*

*2. We recommend that grazing should only be permitted on sovereign lands to the extent that it achieves a wildlife habitat management goal. A grazing management plan with habitat goals and monitoring procedures should be in place wherever grazing is permitted due to the unique and important value of sovereign lands and adjacent lands within the GSL flood plain.*

*3. DWR should determine which areas should be retired or decide the grazing intensity that particular leases can bear. Grazing leases should include more tightly prescribed grazing plans with a target vegetative condition that would accommodate a wide variety of bird species and other wildlife.*

Monitoring proposed for grazing will help determine grazing impacts. Placing the burden on the permittee would not

correctly reflect DNR's approach to stewardship.

*4. DNR should pursue options for buying out and terminating existing permits on sensitive land.*

Buyouts are not necessary. The permits have termination clauses that provide a reasonable opportunity to respond to issues regarding sensitive lands.

*5. We recommend that grazing regulations be revised to include denial for areas that are of value to wildlife habitat and that DFFSL be required to accept DWR recommendations regarding habitat and wildlife management.*

Grazing can be used as a tool to manipulate habitat. DWR will administer grazing in the 39 townships. Other comments on grazing elsewhere around GSL will be considered.

*6. Grazing can be used and an effective vegetation management tool within the context of a grazing management plan that identifies a prescribed condition which accommodates wildlife needs. We support DWR managing grazing in the 23-21-5 townships and would like to see grazing management plans for other sovereign land leases with additional forage condition monitoring.*

To a great extent, the areas where the livestock industry is interested grazing is reflected in the areas where the existing permits are. Right now all the permits are in the 23-21-5 lands. Another area with grazing potential is a relatively small upland area near Black Mountain where the surveyed meander seems to run to a relatively high elevation. An assessment of public trust resources in the area will

be made following location of the meander line. That area's suitability for grazing then will be determined.

## **Issue 12.1 Transportation and utility corridors**

*Reasons supporting the preferred alternative.*

- Public access to AISP via the southern causeway would prove disastrous to the quality recreational experience now available to AISP visitors.
- Filling the south causeway would increase traffic and would unduly disturb migratory birds we are encouraging to nest and forage.

*Reasons opposing the preferred alternative.*

- Railroad causeways and interstate highways on sovereign land is not in harmony with the public trust.

*1. Davis County Causeway should be modified to improve water circulation to help prevent harmful freshening of Farmington Bay.*

See section 2.1 comment response #38,39.

*2. Alternative A should be clarified by explaining how any additional intra-lake proposals would be evaluated in light of alternative 1.6 A, which would prohibit creation of large freshwater embayments on GSL. What criteria would be used for a case-by-case evaluation and the process that will be used for public input and decision-making? We recommend that any transportation proposals that would negatively impact wildlife, habitat, lake level, water quality, salinity or navigation be prohibited.*

The direct relationship to 1.6 would be determined by the design of the



transportation facility, e.g., bridge versus solid fill. A proposal would be evaluated through a site-specific planning process which would lead to preparation of a ROD. The criteria for evaluation would be included in the ROD. Public involvement for that process would be conducted through RDCC.

*3. DNR should develop a plan for restoration and removal of dikes on GSL. We do not believe that the north and south railroad causeways and portions of I-80 over sovereign lands is in harmony with the public trust. At a minimum, hydrological connectivity of the separated southern portions of GSL in this area should be reestablished with the main water body. Although Davis County Causeway provide access to AISP we are concerned that it too is a violation of the public trust and we recommend that the causeway at a minimum should be breached within the next two years to mitigate artificial freshening and restore water circulation in Farmington Bay.*

See comment response #4 under issue 6.4.

*4. The plan should clearly state opposition to intra-lake proposals rather than considering them on a case-by-case basis.*

The public's need for transportation is a legitimate consideration in determining the public interest. A case-by-case evaluation is appropriate.

### **Issue 13.1 Meander line identification**

*Reasons supporting the preferred alternative.*

- DNR must work with local law enforcement agencies to identify, and

where appropriate, post sovereign land boundaries.

- It is reasonable.

*1. What position does the state intend to assert to those resources when the water exceeds the meander line? Is it your position that the upland owner does not own, or is divested of ownership of the minerals in the brines which overly his/her land? Is the state asserting ownership of GSL brines overlying private and or federal land located above meander line?*

*2. The Planning Team makes recommendations up to 4217 and that DFFSL and other state entities coordinate with those entities that have authority above the meander line to implement GSL management alternatives and protect public trust resources. We believe that the authority and the responsibility under the Public Trust Doctrine allows and even requires a more proactive role for DFFSL and the state in regards to watershed and flood plain management necessary for the protection of public trust resources. The plan clearly identifies concerns in the flood plain and the greater GSL watershed that have the potential to severely impair GSL resources. We recommend that the team evaluate how DFFSL and the state can be more proactive in addressing these threats to trust resources.*

To the extent that activities above the meander line are known to significantly affect sovereign lands and resources a more proactive role may be appropriate and certainly would be considered. Some of the monitoring activities proposed in the plan are intended to lead to scientifically-based ecological objectives for GSL. This may aid in the identification of significant adverse

effects. Currently, DNR is not aware of a significant adverse effect that would justify broader involvement. Until the complex interrelationships of GSL systems are better understood, there is no reason to believe that grass-root and federal regulatory plans and processes are not adequate watershed protection measures. Such plans and processes include the Spanish Fork River CRMP, Clover Creek CRMP, a CRMP proposed for the Weber River Basin, the Tri-State Water Quality Commission, various river basin studies, ground water management plans, the Bear River Resource Conservation and Development, regulatory activity of Salt Lake City within its watershed, and the Total Maximum Daily Load process.

#### **Issue 14.1 Search and rescue**

##### ***Reasons supporting the preferred alternative.***

- Improved lake access and increased use of AISP and other lake sites require improved search and rescue equipment and procedures.
- Access is critical on the north arm.

##### ***Reasons opposing the preferred alternative.***

- Limited access to the north arm is a threat to safety. A breach is needed in the causeway to allow unlimited access to the north arm.

*1. Winter emergency responses require special training because of below-freezing lake water temperatures, freshwater ice overlaying saline lake water, and Glaubers Salt can maroon a boat in water charted just deep enough for small craft.*

Agreed. All search and rescue responses are different on GSL and DPR recognizes training is an important aspect.

*2. DNR should also acknowledge the important and valuable role of the brine shrimp industry in voluntarily assisting with search and rescue operations and other emergency situations. The industry also conducts research or data collection and monitoring activities outside the regular season.*

DNR does recognize the role of the brine shrimp industry's collaborative self assistance. AIM is the primary search and rescue launching point for the northern part of GSL but is two hours away from rescues north of railroad causeway.

*3. Better search and rescue capabilities may encourage more recreational activities in areas that are inappropriate.*

There probably are no data to support this claim but it could prove to be the case.

#### **Issue 15.1 Ramsar designation**

##### ***Reasons supporting the preferred alternative.***

- Ramsar designation should not be dropped, but an investigation should continue until management implications are certain.

##### ***Reasons opposing the preferred alternative.***

- Alternative B is better. A designation of this type, supported by the governor, would demonstrate the state's commitment to its own legal requirements to protect wildlife and recreation facilities.
- Ramsar designation could also enhance ability to acquire funds for additional lake studies and monitoring.
- We disagree that Ramsar designation should be rejected because it may not

be compatible with the multiple-use management framework for sovereign lands. Ramsar is fully compatible with the responsibility of the state under the Public Trust Doctrine.

- Alternative B is consistent with the legislature's endorsement for priority management for wildlife.
- Ramsar designation would be beneficial to the economies and wildlife associated with GSL and would help publicize to the world that GSL is of international importance to entire populations of wildlife.
- Ramsar designation is entirely consistent with the goal of maintaining public trust resources.

To forego Ramsar designation so as to not interfere with multiple-use management turns the Public Trust Doctrine on its head by giving multiple-use priority over the public trust rather than vice versa.

*1. Ramsar designation is consistent with and could be part of a comprehensive wetlands plan.*

It could be a part of a comprehensive wetlands plan. DWR is currently surveying wetlands and other priority habitat areas on state lands around GSL. URMCC has supported county and private wetland planning efforts and implementation is underway in Davis and Box Elder County. The DWR Northern and Central Region Offices are working on wetland conservation plans. Many projects are in progress however there is no centralized clearinghouse to bring all of this information together.

*2. The primary management priority should be ecosystem health with the multiple-use framework subservient.*

*Only then will you ensure adequate protection of public trust resources.*

DNR agrees that "DNR and DFFSL are to protect and sustain trust resources and to provide for reasonable beneficial uses of those resources, consistent with their long-term protection and conservation."

*3. Ramsar designation should be avoided because it would largely remove GSL from state control and place too many unreasonable restrictions on activities on the lake.*

DNR will study Ramsar designation implications.

*4. We recommend that any lands in the 39 townships identified by the legislature for wildlife management.*

When DNR investigates Ramsar designation it will consider the 39 townships identified by the legislature for wildlife management since management of this area is more consistent with this wetland designation.

*5. Ramsar site designation alternative A depicts the inconsistency between the public trust and the multiple-use management framework for sovereign lands. Ramsar designation is entirely consistent with the goal of maintaining public trust uses and a decision to forego Ramsar designation so as not to interfere with multiple-use management turns the Public Trust Doctrine on its head by giving multiple use priority over the public trust.*

See comment response #2,3,4. DNR is encouraging interested persons to assist in investigating resource management implications and will investigate this designation in more detail. Ramsar sites

primarily have a wildlife and habitat management focus. Although DNR's primary goal is to protect and sustain resources we must make certain that a Ramsar designation does not preclude allowing for other reasonable uses. Literature on Ramsar sites seems to suggest that Ramsar designation helped prevent dredging for marina development in Canada, mining in South Africa and agricultural development in Hungary. The conflict centers around this designation being utilized to inhibit multiple uses otherwise allowable under the Public Trust Doctrine.

*6. We recommend that a Ramsar application be submitted for agreed upon areas of the lake and surrounding wetlands. Interest parties should begin to examine exactly which lands around or in the lake would be suitable for designation.*

See comment responses #2,3,4,5,6,7. This would require coordination with adjacent land owners and other interested parties to identify lands that are suitable for Ramsar designation around the lake. Interested parties could begin to examine which areas are suitable for designation, investigate this issue further and report to DFFSL.

### **Issue 16.1 Open space and critical lands**

*Reasons supporting the preferred alternative.*

- Additional property or conservation easements and particularly uplands - should be acquired.
- All shorebirds and ducks that nest in the GSL area are ground nesters. With homes, come pets. Unrestrained cats and dogs would destroy all waterbird life stages. A buffer zone between managed wetlands and

development is needed to ensure success of wildlife.

- It seems advisable to not build in the flood plain.

*1. DNR should also consider additional acquisitions to support and enhance existing conservation lands, whether federal, state or privately owned.*

*2. The first priority for purchase or easement acquisition should be highly valued and at risk wetland and wildlife habitat areas located between the meander line and 4217 especially in Salt Lake, Davis, Weber and eastern Box Elder counties.*

Agreed. This screening process will identify critical wetland and wildlife habitat areas that are located around the lake. It is also necessary to have interested and willing sellers. This process is expensive and requires funding.

### **Issue 16.2 Visual resource management**

*Reasons opposing the preferred alternative.*

- Alternative B is better. Because some of the lake is in a non-attainment air quality zone, mitigation strategies must be emphasized.

### **Miscellaneous Comments.**

#### ***Land Ownership/Private Lands***

*1. There is no discussion of the ownership and uses of the public lands managed by the BLM that are adjacent to the lake. The text in the document should mention that BLM manages nearly 40 percent of the total shoreline of the lake and nearly 70 percent of the shoreline on the west side of the lake.*

*2. BLM has two land use plans that affect adjoining public lands along the lake Box Elder Resource Management Plan (1986) and the Pony Express Resource Management Plan (1990) for lands in Tooele and Salt Lake Counties. Some of the decisions in these plans are applicable and should be considered.*

The ownership will be mentioned in a revised SCCT. Many implementation actions will be submitted for review and comment through RDCC. DNR trusts that interested persons will participate in that review. Additional coordination can be achieved through the Natural Resources Coordinating Committee. Right now, DNR is not aware of any inconsistency with BLM plans or land use authorities issued by BLM.

*3. The plan should include more information regarding how access recommendations will be considered and will protect private property owners along the lake.*

*4. The plan fails to adequately address the impact on the land and wildlife due to increased public use. Access through private property has been abused and law enforcement has not been successful on Stansbury Island.*

Conflicts with upland owners can be addressed on a case-by-case basis through efforts such as the access management plan for west Box Elder county, interagency recreation management plans and in response to specific requests by upland owners. DNR will address concerns as they arise.

#### **Public Trust Doctrine/Ecosystem**

*1. We believe that alternatives should be evaluated for their consistency/compliance with the Public*

*Trust Doctrine, irrespective of whether they are consistent with a multiple-use framework, because the doctrine is by far the overriding authority and responsibility. We agree with the statement on page 1.*

*2. To the extent that "multiple-use sustainable yield" is consistent and compatible with public trust responsibilities and acceptable risk, then it may be an additional appropriate criterion.*

*3. We agree with the statements "GSL is large enough to accommodate legislative policy and public demand for resource use and enjoyment" as long as secondary non-trust uses do no interfere with the primary trust purposes. We have concerns that the sustainability of the public trust is jeopardized by some of the preferred management alternatives. The state should protect the resource with higher importance and priority.*

*4. "The effectiveness of multiple-use and sustainable management objectives in balancing development and maintaining environmental integrity." This balancing of development and environmental integrity is counter to the fact that DNR has recognized that GSL must primarily be managed for long-term sustainability.*

*5. Sovereign lands are a public trust resource and the overarching or primary management objective should clearly be "to protect and sustain the trust resources." We are concerned about the manner in which the state's public trust obligation is characterized in the draft plan. Page 1 states this correctly, however the draft plan incorrectly interprets the relationship between the Public Trust Doctrine and statutory multiple-use principles.*

*6. There is no legal authority to support the assertion that the Public Trust Doctrine includes whatever uses the legislature deems appropriate. This*

*notion is opposite to the purposes of the judicially defined Public Trust Doctrine which is to prevent the legislature or other public body from allowing uses that interfere with the public trust (supported by case law).*

*7. Case law indicates that uses are permissible as long as those uses do not impair the superior trust uses. The Utah Supreme Court interpreted the Public Trust Doctrine to allow the state to “grant certain rights in navigable waters if those rights can be disposed of without affecting the public interest in what remains.” Based on this information page 1 is not accurate.: “There is no particular hierarchy of uses, but when there are competing public benefits, the public trust requires those benefits that best preserve the purposes of the public trust under the circumstances would be given a higher priority.” If this statement is correct, then all uses would be entitled to equal consideration at DNR’s discretion and the entire purpose of the Public Trust Doctrine would be undermined. The Public Trust Doctrine is very clear that secondary non-trust uses are permissible only so long as they do not interfere with the primary trust purposes.*

It is agreed that the Public Trust Doctrine is the overriding authority and responsibility. The relationship of multiple-use to the doctrine sometimes is incorrectly interpreted in the SCCT section of the CMP. This is remedied in the final CMP. The correct relationship is stated on page 1. All possible uses under a multiple-use framework are not necessarily protected uses under the Public Trust Doctrine. Any private uses of sovereign lands must yield to the criterion to avoid substantial impairment of protected public uses. Any inference in the CMP that multiple use takes

precedence over public trust obligations will be remedied.

There is no hierarchy of protected public uses under the Public Trust Doctrine. The doctrine remains flexible to address changing public needs. The selected alternatives and supporting rationale are presented as being consistent with the doctrine. Immediate administrative and legal challenges to the CMP and the degree of public disagreement expressed over time may lead DNR to a different conclusion.

*8. The plan presents the overriding importance of a healthy GSL ecosystem to the public for economic, public health and other benefits. We recommend that the alternatives be displayed with regard to the degree of risk they present to the goal of sustaining a healthy ecosystem. We believe that an evaluation of the relative risks in addition to public trust responsibilities are the most appropriate criteria upon which to evaluate management alternatives for the lake.*

*9. There should be more emphasis on the preservation of this delicate ecosystem for the sake of its uniqueness.*

*10. GSL is a sovereign land, a public trust and an international important site for wildlife. We have an inherent responsibility to restore the lake to better health wherever and whenever possible. Degradation has occurred, as population and development pressures have increased and could continue to threaten the lake in the future. A proactive effort for restoration of the lake is necessary and essential to improving the functioning of the lake in light of human impacts.*

Sustainability is the standard presented on page 1. Degree of sustainability is not a useful measurement. None of the

selected alternatives pose a substantial threat to the ecosystem.

*11. This report does not do justice to the complexity of the interactions of GSL with our environment in regards to climate.*

The effect of the lake on climate has changed over the centuries. Nothing in the CMP will affect climate or vice versa.

*12. We agree that existing jurisdictional boundaries may limit the ability of DNR to consider GSL ecosystems beyond the meander line. However, DNR does have a public trust responsibility to take every action within its means and authority to protect the public trust. If actions beyond jurisdictional boundaries are diminishing GSL trust resources, DNR has the responsibility to take actions to rectify the situation. We encourage DNR to promote and participate in watershed level planning and conservation efforts within the greater GSL watershed which will provide information, identify problems, build collaborative relationships that expand jurisdictional and statutory authority to prevent and remediate problems and provide leadership in protecting public trust resources.*

See comment response #3 to issue 1.1.

*13. I think its too bad that people of southern Utah are being left out of this debate.*

They have had the opportunity to participate to whatever extent they choose.

## **Resource Allocation**

*1. The alternatives should not be displayed as “environmentally or commercial or development values.” Many land and resource allocations do involve mutually exclusive choices between these extremes, however the lake is not one of these cases. Except O&G leasing and excessive diking, the economic benefits and opportunities provided by the lake are dependent on the lake’s environmental health.*

*2. All the action verbs in the legislative framework ignore the lake and what it represents as a natural and unique closed basin brine lake ecosystem.*

To the extent that multiple-use management does not substantially impair protected public use of sovereign land, there is nothing wrong with describing alternatives as they have been described.

*3. Why doesn’t anyone want to initiate water conservation in Utah? Now is the time to start teaching responsible citizenship.*

The DWRe and water conservancy districts are doing this.

## **Goals and Objectives**

*1. The plan lacks specific statements of goals, time-frames and methods for reaching them, criteria by which proposals and management actions will be chosen and evaluated, explanations of when and how the public will be informed and involved in the decision-making and management process. We believe that these deficiencies should be rectified for the plan to serve the purpose of setting priorities and guiding*

*decisions and management activities affecting GSL.*

Time frames are in the implementation section. RDCC is the primary public involvement opportunity. Specific goals may or may not be stated for implementation activities before they are implemented.

*2. We support the development of “targets” or objectives as long as protecting the resource or making certain that multiple-uses are secondary to overarching management objectives. We are concerned that overarching management objectives may not be kept uppermost in the management of GSL.*

Agreed. Monitoring will improve DNR’s ability to develop meaningful targets.

*3. We need to develop a set of affirmative ecological objectives for GSL or by defining the “desired future condition” for GSL ecosystem. In sound planning, all other aspects of management are judged based on whether they promote or are consistent with the defined long-term ecological objectives for restoration and protection of the system.*

*4. Monitoring a range of GSL ecological conditions is necessary to develop ecological objectives and provide long-term ecosystem sustainability.*

This is a complex system and we are learning more about the lake and its resources. The long-term objective is sustainability (see page 1 of the Draft CMP). Recommended monitoring and research actions are the initial steps to improve DNR’s ability to define more specific long-term ecological objectives for the lake.

Mentioning the long-term objective on page 1 of the Draft CMP establishes its importance. Implementation effectiveness and programs will depend on funding. DNR will continue to seek funding for implementation of this plan. It will likely require a phased approach.

*4. Other multi-jurisdictional planning efforts align their more specific management, restoration and protection programs with these defined ecological goals. These measurable goals can be used as an objective way to measure efforts with principles of adaptive management. We urge that GSL planning effort establish a scientifically-based program to define both general and specific long-term ecological objectives that can be used to govern planning and management.*

*5. We recommend that the overarching management objective state on page 1 should be reiterated to emphasize and clarify its significance and we urge the state to sincerely and aggressively implement management strategies which consider the entire ecosystem in principle.*

*6. DNR should clearly state the goals that are influencing the management alternatives presented in the plan. The rationale is scant and many of the alternatives did not have a coherent basis. Overall goals would promote consistency, provide benchmarks for assessing progress, provide an underlying purpose for all management activities and should transcend changes in leadership. Establishing goals and defined management principles will allow the plan to take an appropriate direction with new and upcoming management questions.*

*7. The first objective for the plan should be to identify major goals for resources and then identify the conflicts and*



*coordination needs in the context of major goals.*

Scientific information will be used to govern planning and management decisions. There is not enough information to develop complete and measurable ecological goals for adaptive management. The GSLEP, this planning effort and other division efforts will help DNR better define future ecological goals. This is a starting point for future multi-jurisdictional goals.

*8. A comprehensive watershed approach is in the best interest of the lake for the public trust.*

*a) Broaden the geographic focus from the lake to the watershed of the lake.*

*b) Shift the focus from single-agency to multiple-entity planning.*

*c) Shift the focus of efforts from resource use and allocation to resource restoration and protection.*

*d) Shift the time focus from the short-term to the long range.*

*e) We need to move from planning to implementation.*

*9. DNR should seek greater participation in inter-jurisdictional management in support of developing cooperative management goals between state, county and local government defined in a watershed management context.*

*10. The plan should stress the natural whole ecosystem by emphasizing linkages and interactions between the subwatersheds. The effect of cumulative impacts on the ecosystem should be studied.*

See section 1.1, comment response #4.

*11. I cannot stress how important well funded and organized research now will be to future management of the lake. We can never use our lack of comprehensive*

*knowledge of the ecosystem as a pretext to ignore what we do know and what common sense and simple observation is telling us. The preferred alternative is the least we can afford to do now before the situation deteriorates further.*

*12. Bi-monthly lake level readings should continue.*

*13. Nutrient loading of wetlands should be monitored.*

Agreed.

*14. For research and monitoring, a detailed table should show actions, commitments and timetables.*

DNR is recommending a phased approach. This depends on funding. See the Research and Monitoring section of this document.

*15. Additional monitoring needs include: evaporation, salt crust, precipitation, Glaubers Salt formation, algal growth, diatom growth.*

These ideas will be considered, but at this time most are low priority.

### **Legacy Highway**

*1. I oppose the Legacy Highway and the diverting and damming of Bear River since these projects will destroy marshy areas and ruin habitat for millions of migratory birds.*

*2. If we do nothing about the Legacy Highway and its serious impact on wetlands and bird habitat we have failed as good stewards of the land.*

*3. The answer to gridlock is not the Legacy Highway. The state needs effective and reliable mass transit.*

DNR is focusing efforts below and adjacent to the meander line to improve internal coordination and address issues that directly affect DNR land.

## Comment Contributors

### Comments to Scoping

Scoping issue ideas were received from the following persons, and groups:

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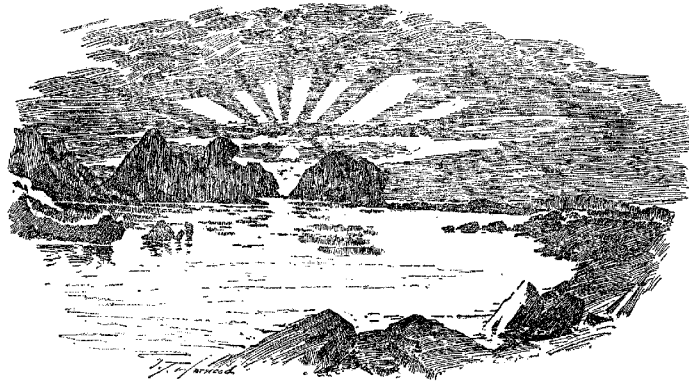
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McDougal, Richard M.  
Mecham, Glen (Diversified Technologies International)  
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Tilley, Kent (Inland Sea, Inc.)  
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# Appendix B

## Acronyms and Abbreviations



## Acronyms and Abbreviations

af/yr	acre-feet per year
AGRC	Automated Geographic Reference Center
AFB	Air Force Base
AIM	Antelope Island Marina
AISP	Antelope Island State Park
BDA	Beneficial Development Area
BLM	Bureau of Land Management
BOD	Board of Directors
BRMBR	Bear River Migratory Bird Refuge
CMP	Comprehensive Management Plan
COE	U.S. Army Corps of Engineers
COR	Certificate of Registration
CUP	Central Utah Project
DAQ	Division of Air Quality
DCEM	Division of Comprehensive Emergency Management
DCMP	Draft Comprehensive Management Plan
DEQ	Department of Environmental Quality
DFFSL	Division of Forestry, Fire and State Lands
DGSL	Division of Great Salt Lake
DNR	Department of Natural Resources
DOGM	Division of Oil, Gas and Mining
DPR	Division of Parks and Recreation
DSL	Division of Sovereign Lands and Forestry
DWQ	Division of Water Quality
DWR	Division of Wildlife Resources
DWR <sub>e</sub>	Division of Water Resources
DWR <sub>i</sub>	Division of Water Rights
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GIS	Geographic Information System
GOPB	Governor's Office of Planning and Budget
GPS	Global Positioning System(s)
GSL	Great Salt Lake
GSLAC	Great Salt Lake Advisory Council
GSLBOD	Great Salt Lake Board of Directors
GSLC	Great Salt Lake Coalition
GSLDD	Great Salt Lake Decision Document
GSLEP	Great Salt Lake Ecosystem Project
GSLM	Great Salt Lake Marina
GSLRD	Great Salt Lake Resource Document
GSLTT	Great Salt Lake Technical Team
HAFB	Hill Air Force Base
I-80	Interstate 80
IMC	IMC Kalium Ogden Corp
KUC	Kennecott Utah Copper
Magcorp	Magnesium Corporation of America



ML	Mineral Leasing
MLP	Mineral Leasing Plan (for Great Salt Lake, Division of Forestry, Fire and State Lands)
MOU	Memorandum of Understanding
OERP	Office of Energy and Resource Planning
OGH	Oil, gas and hydrocarbon
OHV	Off highway vehicle
ppm	parts per million
ppt	parts per trillion
RAC	Regional Advisory Council
RDCC	Resource Development Coordinating Committee (State Information Clearinghouse)
RMP	Resource Management Plan
ROD	Record of Decision
SCCT	Statement of Current Conditions and Trends (Great Salt Lake Planning Project, 1998)
SLAC	Sovereign Lands Advisory Council
SLB&M	Salt Lake Base and Meridian
SLC	Salt Lake City
SLCIA	Salt Lake City International Airport
SPRR	Southern Pacific Railroad
SPTC	Southern Pacific Transportation Company
SRC	Scientific Review Committee
TNC	The Nature Conservancy
UDOT	Utah Department of Transportation
UGS	Utah Geological Survey
UP&L	Utah Power & Light
UPRR	Union Pacific Railroad
URMCC	Utah Reclamation Mitigation and Conservation Commission
USAF	U.S. Air Force
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
USU	Utah State University
VRM	Visual resource management
WDPP	West Desert Pumping Project
WMA	State managed waterfowl or wildlife management areas depending upon the context

# Appendix C

## Exhibits



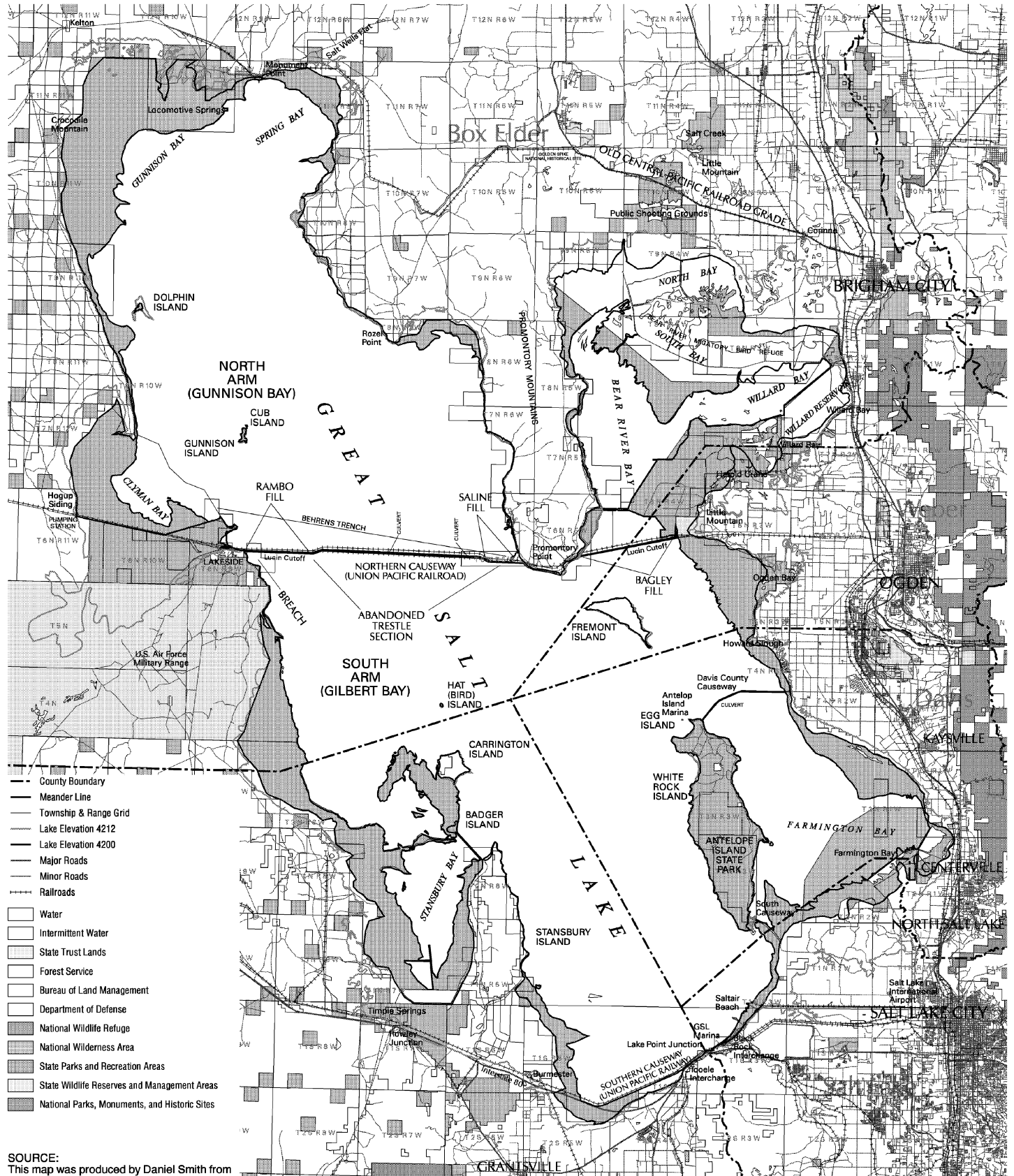
## **Exhibits**

### List of Exhibits

Exhibit 1	General Map
Exhibit 2	Sovereign Land Classifications
Exhibit 3	Sovereign Lands 39 Townships Identified by the Legislature for Wildlife Management
Exhibit 4	Mineral Salts
Exhibit 5	Oil and Gas Leasing
Exhibit 6	GSL Salinity Graph

# Exhibit 1 - Great Salt Lake Location Map

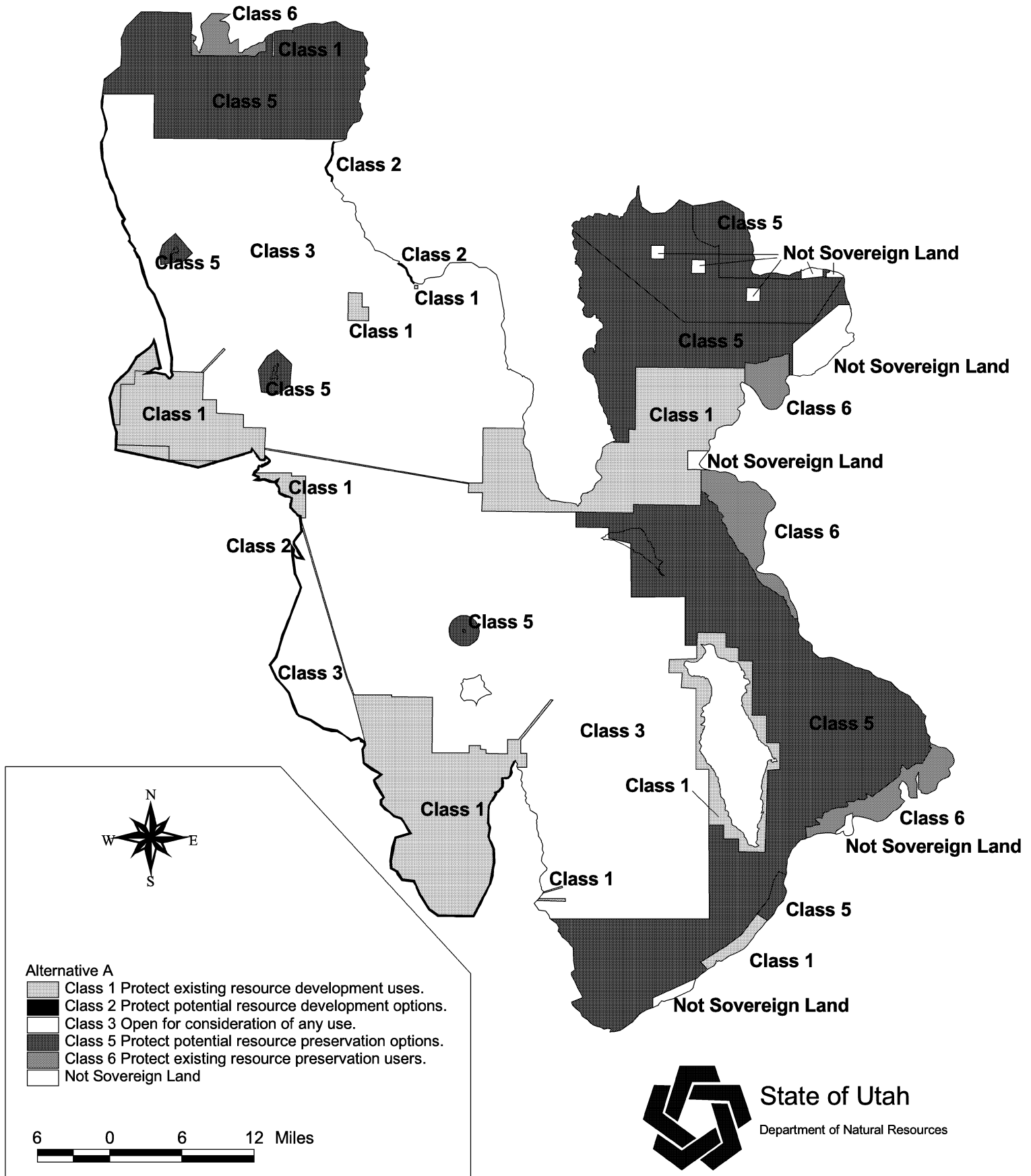
Plotted February 17, 2000



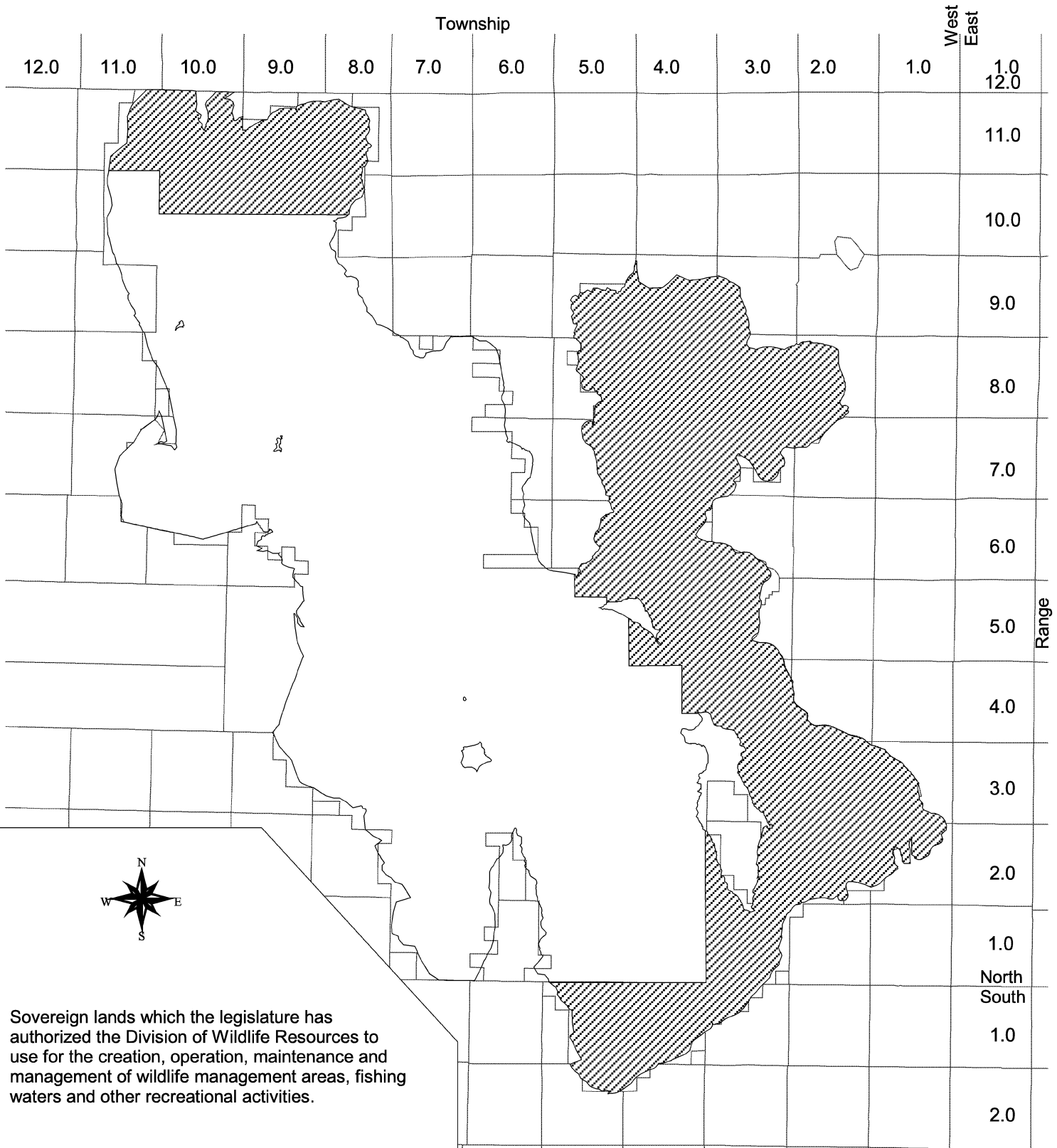
**SOURCE:**  
This map was produced by Daniel Smith from the Utah Division of Oil, Gas and Mining Information on this map was compiled by the Utah Department of Natural Resources and the Utah Automated Geographic Reference Center.  
Official and detailed information is only available through DNR and AGRC.

## Exhibit 2

# SOVEREIGN LAND CLASSIFICATIONS

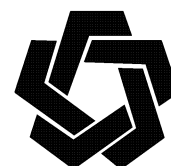


# EXHIBIT 3



Sovereign lands which the legislature has authorized the Division of Wildlife Resources to use for the creation, operation, maintenance and management of wildlife management areas, fishing waters and other recreational activities.

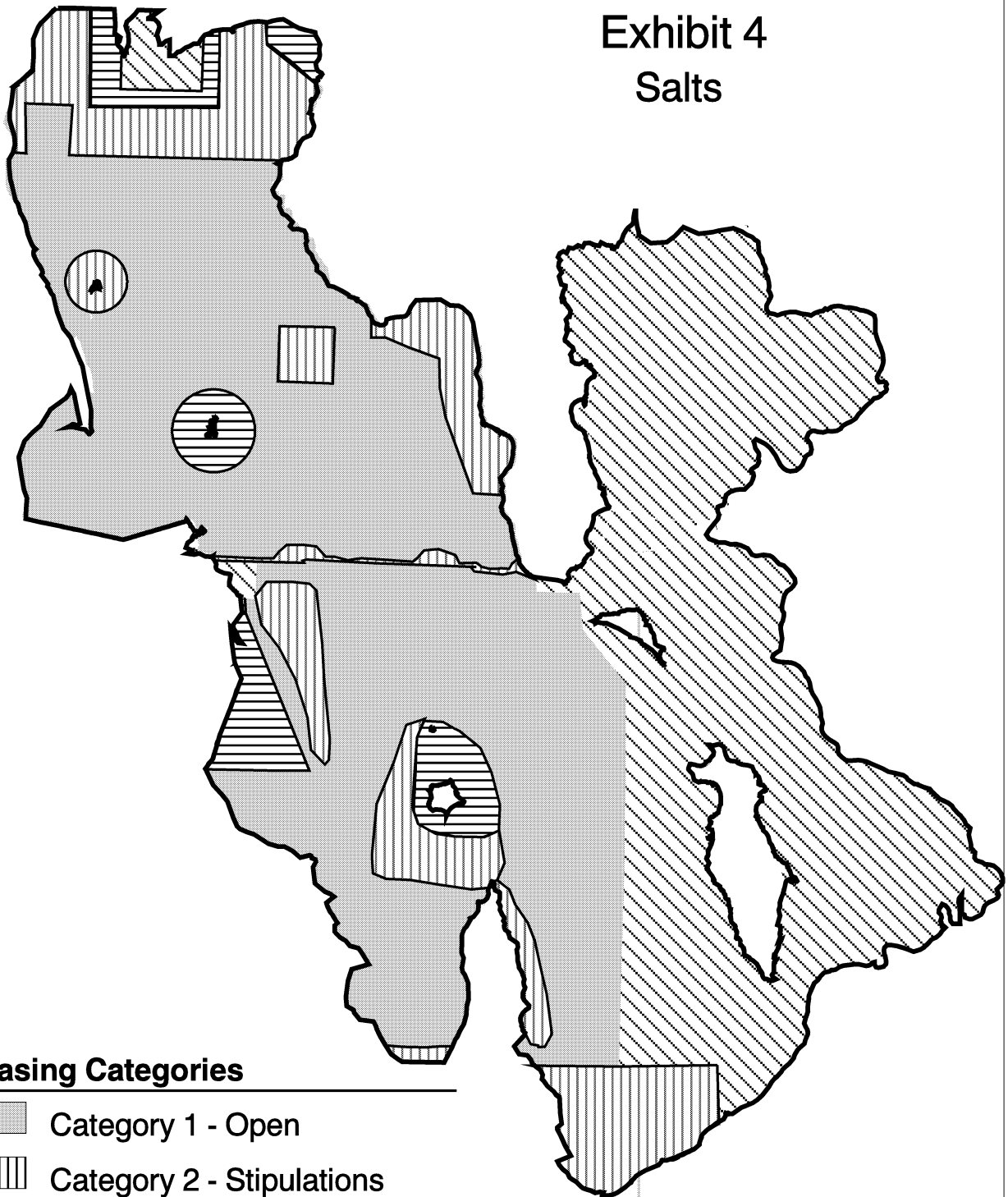
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

State of Utah

Department of Natural Resources

## Exhibit 4 Salts



### Leasing Categories

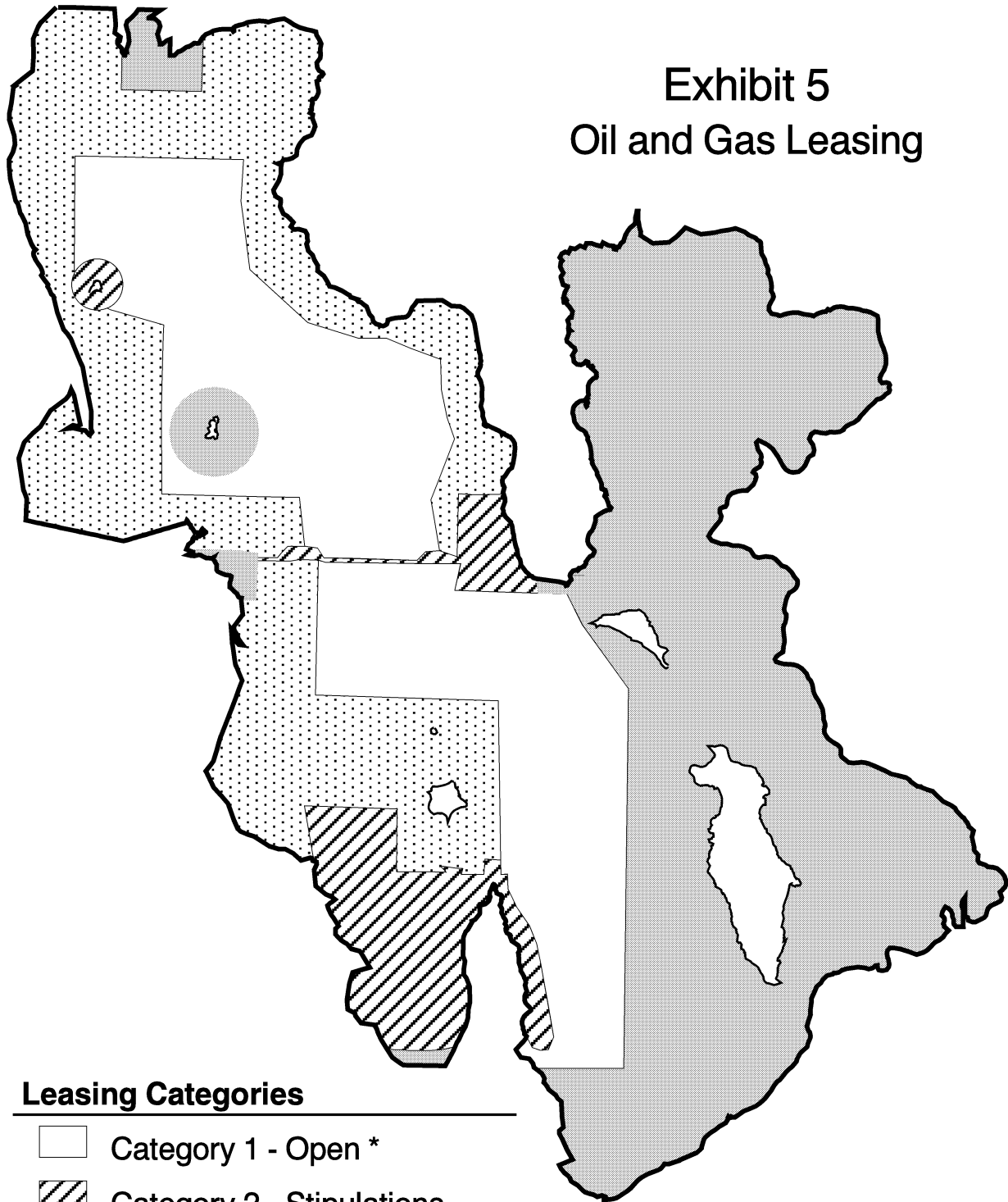
-  Category 1 - Open
-  Category 2 - Stipulations
-  Category 3 - Brines Only
-  Category 4 - No New Leasing







State of Utah

Department of Natural Resources

## Exhibit 5 Oil and Gas Leasing



### Leasing Categories

-  Category 1 - Open \*
-  Category 2 - Stipulations
-  Category 3 - No Surface Occupancy
-  Category 4 - No New Leasing

\* Except Antelope Island and non-state lands



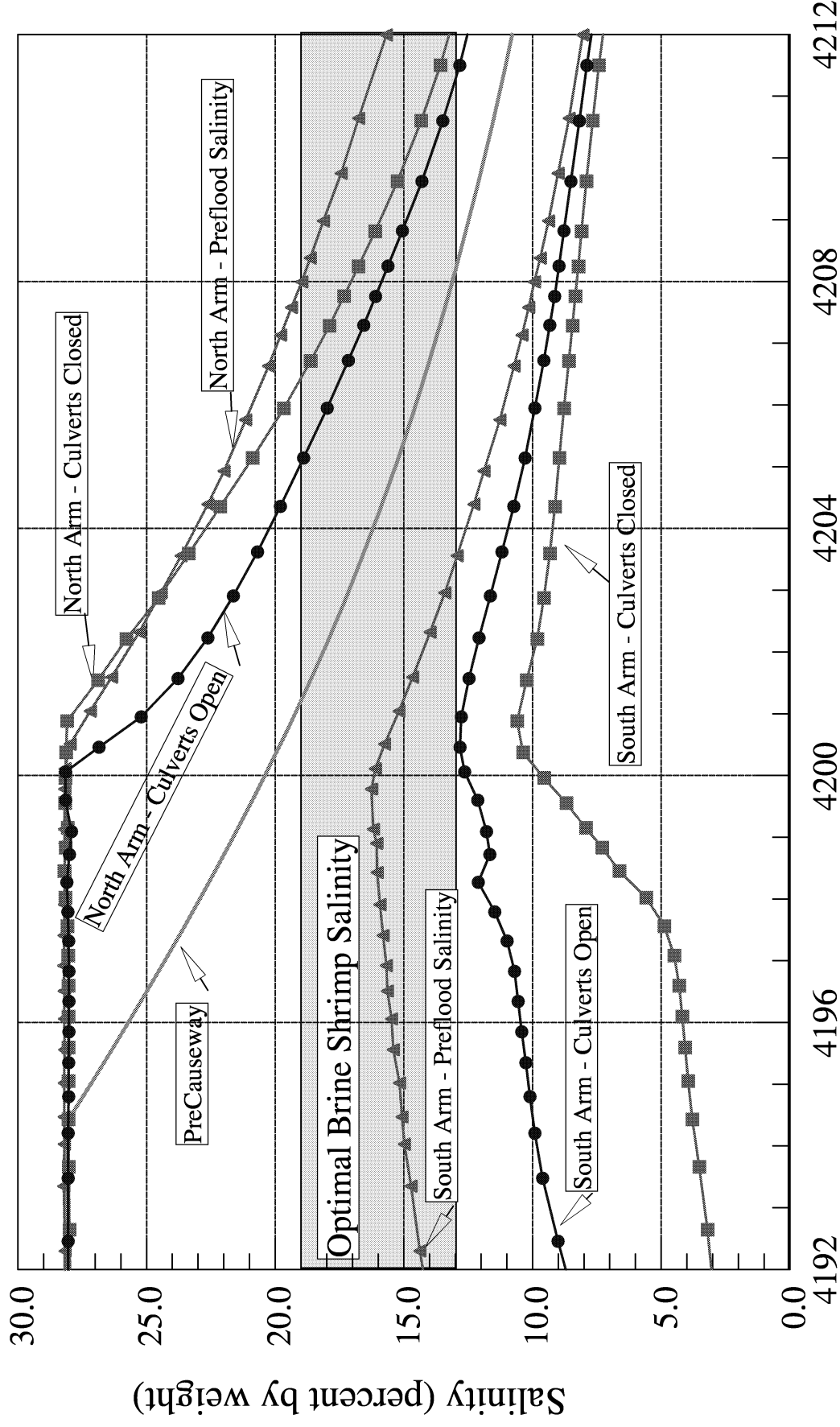
State of Utah

Department of Natural Resources



# Exhibit 6

## Salinity vs South Arm Elevation



South Arm Elevation (feet)

**Illustrations are from Our Island Sea, 1909, and are used by permission, Utah State Historical Society, all rights reserved.**

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